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Fishing Rights Debate
Artisanal Fishing Communities in Chile
Alaska's Small Fishing Communities
Media Workshop on West African Fisheries
Venezuela's Artisanal Fisheries
Tuna in the Philippines
News Round-up

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Comment

Looking at aquaculture

Today, over 44 per cent of global fish production for direct human consumption originates from aquaculture. However, even as we recognize the potential role of aquaculture and mariculture in contributing to employment and food security, there are several questions that need to be answered: Can aquaculture and mariculture practices be undertaken without displacing farming and fishing communities, without destroying habitats, and without reducing biodiversity? Can aquaculture help to reduce pressure on coastal fisheries by providing alternative employment? Can it contribute to food security and poverty alleviation? Can aquaculture ensure decent conditions of work and fair wages to the workers in the sector? Is there anything that can truly be called 'sustainable aquaculture'? These are some of the questions that are being asked by fishing, farming, and other communities in coastal and inland areas where aquaculture is being practised.

Global aquaculture production has doubled from 20.7 mn tonnes in 1994 to 45.08 mn tonnes in 2004. Asia alone accounted for 90 per cent of this production. During the same period, the production of shrimp trebled from 0.8 mn to 2.4 mn, and that of Atlantic salmon, from 0.4 mn tonnes to 1.2 mn tonnes. Statistics of employment opportunities in aquaculture are available for some countries. Over four million people, for example, depend on aquaculture for life and livelihood in China and Bangladesh, over two million in Indonesia, and over one million in India and Vietnam.

The *State of World Aquaculture 2006* from the Food and Agriculture Organization of the United Nations (FAO) acknowledges that "there is still insufficient information on trends in the contribution of aquaculture to employment, poverty reduction, health, nutrition and social development, and the impact of aquaculture on the environment". There is also poor information about women workers in aquaculture. The FAO report also acknowledges that aquaculture workers in Latin America are affected by decreasing wages.

Undeniably, aquaculture has made rapid strides in increasing production during the last couple of decades. Analysts predict a future of continuing growth, intensification and diversification of aquaculture. Yet, disturbingly, there is very little conclusive information on the positive social and environmental impacts of aquaculture on rural communities. In such a situation, it is difficult for rural communities to take a position on aquaculture development. The countries that are investing in rapid development of aquaculture should ensure that aquaculture does indeed contribute to sustainable development, and that it does not leave in its wake an abused labour force, swathes of degraded mangrove forests, contaminated inland and coastal waters, threats to biodiversity from the introduction of exotic species, and destruction of natural habitats.

We would argue for a perspective that places fisheries and aquaculture within the framework of the human development of rural communities (see pg. 48). In this context, aquaculture development should be subject to checks and balances to ensure that it is not reduced to a mere investment activity by a few who have access to capital and can thus extract all benefits of nature, at the expense of local communities and their livelihood options.

Opening the tragedy?

Institutional reform and the need for reallocation should figure prominently in policy on fishing rights, especially in developing countries

Through the last two issues of *SAMUDRA Report*, we have witnessed an interesting debate regarding the allocation of fish rights. First, Derek Johnson reflected on the Sharing the Fish Conference 2006, held in Australia, pointing out the traditional dominance of the rich 'temperate minority' countries over the Southern developing countries in matters of presentations, discussions and solutions (see *SAMUDRA Report* No. 43, March 2006, pg. 11). Later, Ichiro Nomura, Assistant Director General in the Fisheries Department of the Food and Agriculture Organization of the United Nations (FAO), came up with a reply, claiming that rights-based fisheries are *the solution* but admitting that 'one size does not fit all', ending with the suggestion for a conference where focus should be on the challenge of allocating fishing rights in developing countries (see *SAMUDRA Report* No. 44, July 2006, pg. 25).

My reflection here is on the dilemmas contained in this challenge. Before that, however, a clarification on rights-based fisheries management in the North. Rights-based management comes in many forms, including licensing and individual as well as community quotas. Individual quotas may again be allocated as individual fishing quotas (IFQs), individual vessel quotas (IVQs) or individual transferable quotas (ITQs), each with special features and outcomes. All solutions are well known in the North (and 'down under' South), but during the last ten years, focus has increasingly been on the ITQs, a fact reflected also at the first Sharing the Fish Conference in 1999, where New Zealand and Australia featured prominently.

I think it is fair to say that ITQ systems, as originally developed in New Zealand and

Iceland and later copied in at least 15 other countries, have experienced differential success. They have, most often, improved the economic performance of the fisheries, and have contributed to more sustainable fisheries in biological terms (although hard evidence is still often lacking), but they have generally been weak on *equity*, especially in terms of neglecting crews and local communities. Some countries, like the United States, have introduced community quotas (as in Alaska), but these attempts have been few and marginal compared to the massive drive towards ITQs or systems closely resembling them (as is the case with the Norwegian IVQ system). Generally, these countries have the human and economic resources necessary to run ITQ-systems, and, even more important, they have (although to a variable degree) alternative employment possibilities for fishers who are made redundant. To illustrate, Norway had 115,000 fishers in 1946, but it now has fewer than 15,000. Yet, this decline has not created any major unemployment problems.

The problem arises, as pointed out by John Kurien in *People and the Sea: A Tropical 'Majority World' Perspective*, when the ITQ-missionaries start preaching the ITQ gospel to large developing countries with thousands of artisanal fishers, like China, India, Indonesia and Vietnam, and also smaller ones in Africa and Latin America.

Greater caution

FAO is a little more cautious, advocating in favour of *rights-based fisheries management* (although not necessarily ITQ systems), with the rhetorical bottom-line that without biological sustainability, all fishers are going to end up poor. According to Nomura, "The current variety of schemes for formally allocating fishing rights has vastly expanded the

Figure 1: A Framework to Identify the Occurrence and Types of Poverty (Béné 2004)

range of fisheries and fishing situations to which rights-based schemes can be applied.

They should apply to large- and small-scale fisheries, both with large and small boats. They are, by far, the best tool to re-establish and formalize traditional fishing rights and thus, protect the rights of fishermen. Even ITQs need not threaten the livelihoods of small-scale fisheries, and they should not foster inequity if well designed.”

As indicated by Johnson in his *SAMUDRA Report* article, there are good reasons to be sceptical about too simple solutions. While donor agencies have gradually changed their priorities, more in favour of small-scale fishers and, in particular, targeting the poor (and for a period ‘the poorest of the poor’), the underlying logic has all along been that fishers in developing countries are generally poor, measured against any standard. However, as pointed out by C. Béné (*When Fishery Rhymes with Poverty: A First step Beyond the Old Paradigm on Poverty in Small-scale Fisheries*, *World Development* 31, No. 6, 2003), in the current literature on poverty there is almost a complete absence of references to case studies from fisheries. Béné attributes this lack of references not to the low number of fishing studies portraying poverty but to the nature of scientific production and the way the literature proposes to explain the

cause(s) and origin(s) of poverty in small-scale fisheries.

Generally, there seem to be two contrasting interpretations of the relationship between poverty and fisheries. The first claims, “They are poor because they are fishermen”. Within this intellectual tradition, there are two lines of reasoning. One has its origins in H. S. Gordon’s classic paper on open-access fisheries (*The Economic Theory of a Common-Property Resource: The Fishery*, *Journal of Political Economy* 62, 1954), an idea that was powerfully reinterpreted in Hardin’s seminal article, describing the tragedy of the commons (*The Tragedy of the Commons*, *Science* 162, 1968). Here the open-access nature leads to more and more people entering the fisheries, resulting in overfished resources, an elimination of the resource rent and, ultimately, in the impoverishment of the fishers and their communities. This intellectual tradition is a solid one, with a large number of contributions from both scientists and donor organizations. There is no doubt that overexploitation is a major cause of impoverishment, but not necessarily *the major cause*.

Exogenous origin

While poverty, in this tradition, is explained as an endogenous effect, the exogenous origin of poverty is explained by showing the low alternative cost of labour in the fisheries. Writing on the

particular problems of small-scale fisheries, T. Panayotou pointed to the fact that most fishers (in Asia) have a low alternative cost of labour, and with easy access and difficult exit they are ‘trapped’ in the fisheries (*Management Concepts for Small-scale Fisheries: Economic and Social Aspects*, FAO Fisheries Technical Paper 228, 1982).

In other words, the situation outside the fisheries is most important. However, several writers combine the two explanations without making the necessary distinction, thus confusing the analytical understanding of what causes poverty in the fisheries.

The other major idea—“They are fishermen because they are poor”—indicates that fisheries is an employer of last resort, where those falling out of the agricultural system can manage to eke out a living by fishing. Common-property resources are, therefore, extremely valuable for poor people, and any attempt to close the participation may result in increased poverty.

The coastal fisheries in Mozambique may be a good case in point, where large numbers of people have migrated from the countryside to the coast, because of the civil war and the problematic agricultural situation. They have taken up subsistence fishing, partly in competition with existing fishers. Limiting access for them would often be a life-and-death matter.

Both solutions (limiting access and providing alternative employment) have been utilized by a variety of donor-assisted fisheries projects, with mixed success. The latter approach opens the way for a diametrically different policy than the former. If the fisheries is seen as an essential employer of last resort, within a much larger system of livelihood creation (based on various resources and various occupations), it is hard to stick to the idea of *sector development*. It is even harder to limit access in the classic way done in Western, developed fisheries. On the other hand, unlimited access can cause severe damage to a developing fishery. So what should we do? If we limit access to ‘traditional fishers’, ‘original fishers’ or ‘existing fishers’, we run the risk of cutting off an important source of livelihoods for

poor coastal populations, while, if we keep the commons open, the resources will sooner or later be fished down.

Some try to escape the dilemma, by pointing to the fact that open access does not necessarily have to produce the tragedy.

According to one study (*Management, Co-management or No Management? Major Dilemmas in Southern African Freshwater Fisheries*, FAO Fisheries Technical Paper 426/1, FAO, 2004), classical management approaches applied to the inland lake fisheries in southern Africa have been misplaced, being led by patchy or simply wrong information regarding fishing effort (catching capacity).

The main argument is that the catching capacity of the inland lake fisheries has been extremely variable, fluctuating not only with the amount of fish available (following natural variations), but also following macroeconomic variations, thereby creating increasing or decreasing opportunities in other occupations. During severe droughts, many people are naturally attracted to the fisheries, while when the situation is more normal, they will return to former occupations. Capacity moves up and down as a result of numerical flexibility, while few fishers have invested in more efficient gear or vessels. Most fishers in the southern African inland fisheries are not specialist fishers. They have fishing as one of several possibilities in a livelihood repertoire. Even if the total effort has increased in all inland lakes’ fisheries, this increase is not always considered serious enough to warrant limiting access. Limiting access under these conditions would only aggravate the situation for the poor. In some cases, *no management* can actually be better than the existing regime!

Greater mobility

This is, no doubt, an important result, having profound consequences for management of the fisheries in these lakes, but it is difficult to generalize and extend these findings to other artisanal fisheries, for example, in the marine sector, for several reasons. First, because of greater mobility in marine fisheries, it is much more difficult to maintain the idea of slow growth. Vessels from neighbouring

countries as well as distant-water fleets will easily operate in fisheries that seem promising and profitable. This is even more so since most developing countries do not have an efficient system of monitoring and control.

Second, it seems that technological improvements are much more easily spread in the marine fisheries. This is partly because marine fishing, especially in several Asian countries, is extremely dynamic, with access to varied sources of capital and with few obstacles in acquiring more efficient gear.

Third, much of the marine catch is now meant for a world market, being within reachable destinations and quality standards, and market opportunities are much greater than those for African inland lake fisheries.

Finally, there are good reasons to return to Panayotou's argument about easy access and difficult exit or Daniel Pauly's concept of 'Malthusian overfishing' (*On the Sex of Fish and the Gender of Scientists: Essays in Fisheries Science*, Chapmann and Hall, 1994). While this may not be the case for inland fisheries in southern Africa, it is definitely the case in a number of Asian fishing nations. Effort is being increased both vertically (improved technology) and horizontally (numerically).

In sum, these factors would indicate that we cannot be too optimistic regarding the catching capacity in the marine fisheries. Even if stock assessments are scarce, we know enough to say that the fishing pressure on near-shore resources in a number of large fishing nations in the Third World, especially in Asia, is not sustainable in biological terms. Still, we should maintain the institutional perspective, turning "the research away from the issue of natural resources limitations per se, toward social, cultural and political elements which shape the relationships between poor people and these natural resources and between poor and less poor people" (Béné, 2003).

There is no clear-cut solution to this dilemma, but perhaps we should start discussing more in the direction of *policy reform*, that is, on the need for reallocation. While fisheries economists are eager to make a distinction between management and allocation, I believe that there is a clear connection.

Effective management

Without a better, more legitimate allocation, it will prove impossible to introduce (and maintain) an effective management system. Again, I find it useful to return to a scheme developed by Béné (*The Challenge of Managing Small-scale Fisheries with Reference to Poverty Alleviation*. In Neiland, A. and C. Béné

(Eds.): *Poverty and Small-scale Fisheries in West Africa*. Kluwer Academic Publishers, Dordrecht, 2004).

One route to poverty is via the lack of surplus generation, caused by lack of efficient gear or an ecological crisis (a temporary disappearance of the exploited stocks). But even *with* surplus generation, there may be poverty, because of what is called an institutional entitlement failure. As Béné puts it: “In other words, satisfying the constraints of ecological and economical viabilities is a necessary, but not sufficient, condition to reduce the level of, or to prevent the occurrence of, poverty in fishery. A second necessary condition is the existence of some sort of (re-)distribution mechanism which will ensure that the rents generated through fisheries activities are redistributed (either directly or indirectly) to the community/society. If such mechanisms do not exist, the rent is likely to be appropriated by the most powerful, and poverty will occur.”

Béné concludes by saying, “Poverty in fisheries [may be] more related to institutional factors than to natural ones”. If this is the case—and I happen to believe Béné’s analysis is correct also outside west Africa—more effort and thinking need to be devoted to institutional reform. The point is simple: rights-based fisheries management may secure some type of ownership, be it individual or collective. But we need to secure rights for the right people. That can only be done through institutional reforms, giving some type of preferential access to the poor fishers. This can be done in many ways. Indonesia, for instance, has shown the beneficial results of prohibiting trawling in the near-shore fisheries.

In other cases, fishing rights have to be reallocated. Needless to add, this will be difficult. Even in developed countries, it is extremely complicated to carry out redistributive reforms. But this institutional requirement has to be set on the agenda, and one start could be made by donor organizations operating in fisheries contributing to the buying out of more powerful interests. While confiscation was the key to many previous land reforms, the principle of a ‘willing

buyer’ and a ‘willing seller’ is more appropriate at present. To phrase it differently: starting a new fisheries policy by confiscating the rights of the most powerful will quite often be detrimental. I am not saying that direct reallocation of rights and quotas can be done in all developing countries’ fisheries, but we certainly need to start the process of considering such reforms. If not, we will repeat the case of the South African fisheries reform, where a large part of the bona fide fishers were excluded from participating precisely because the reforms mainly catered to the more powerful interests. Institutional reform and the need for reallocation should figure prominently in policy and a future conference on rights-based fisheries should perhaps be called ‘Fishing Rights to the Right People’. Even if one size does not fit all, *reallocation* will certainly fit most poor fishers.

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Aquaculture

The desert shrimp farmer

The National Prawn Company in Saudi Arabia hopes to be the “world’s largest and fully integrated desert coastal shrimp farm”

Despite extensive marine fishery resources off the 1,600-km coastline along the Red Sea as well as 500 km along the Arabian Gulf, the Kingdom of Saudi Arabia has not been able to cater to the growing demands of its population domestic citizens as well as migrant workers and foreign residents. Large quantities of fish and other seafood products have been imported to partly satisfy domestic demand. In order to increase local production, and also better manage Saudi Arabia’s capture fisheries, and reduce its import bill, the Government has been encouraging the private sector to pursue aquaculture of finfish and shrimp. It established the Fish Farming Centre (FFC), along the Red Sea Coast, 60 km north of Jeddah, as a focal point in the development of the aquaculture industry.

The FFC was established in 1982 as a result of a Unilateral Trust Fund (UTF) Agreement between Saudi Arabia’s Ministry of Agriculture and Water (MoA) and the Food and Agriculture Organization of the United Nations (FAO). The FFC’s main thrust was research and development (R&D) for culturing marine finfish and shrimp species that are suitable for farming on a large scale in the country, thus establishing a home-grown aquaculture industry.

As a result of the FFC’s efforts, over 100 fish farming projects have been established in the last few years in various parts of the country to raise various varieties of finfish, mainly Nile tilapia (*Oreochromis niloticus*), the blue tilapia (*O. aureus*) and red tilapia hybrids, and also the common carp (*Cyprinus carpio*) and the African catfish (*Clarias gariepinus*). Three major shrimp farms were also established along the Red Sea coast to

raise both the tiger shrimp (*Penaeus monodon*) and the white shrimp (*Penaeus indicus*).

Perhaps the most pioneering shrimp enterprise established is the National Prawn Company (NPC), which claims that, when completed, it will be the “world’s largest and fully integrated desert coastal shrimp farm”, and a “leading benchmark in the global shrimp farming industry”. The project, whose total site area is 128.4 sq km, is located in the desert coastal areas of the Red Sea, 15 km south of Al Leith township, and around 180 km south of Jeddah, Saudi Arabia’s major commercial city.

NPC began with the establishment of its first research station based on the technical shrimp farming experience of countries such as China, Thailand, Indonesia, India, Vietnam, Ecuador and others in central America. It has also received technical co-operation from the FFC. NPC has tried to ensure ecologically sound site selection by choosing the unpolluted waters of the Red Sea. It also claims to be socially responsible by not competing with local fishermen and communities for land and livelihood resources, and by creating job and training opportunities for locals.

So as to establish sustainable production practices, NPC used domestic brood stock from native shrimp species, and avoided antibiotics and prohibited chemicals in its feed. It also avoided using fresh water as well as the mixing of influent and effluent waters.

Economic viability

Through these principles and criteria, NPC has successfully proven the economic viability of Red Sea shrimp farming in Saudi Arabia. The company underwent



three major stages in its development. It invested an estimated US\$200 mn in the first R&D stage between 1982 and 1987, during which it successfully spawned the *P. indicus* species of shrimp.

In 1985, it succeeded in spawning *P. semisilcatus*, and in 1987, *P. monodon*. In its second stage of experimental operations, during 1988-1995, it managed ten full *P. monodon* culture cycles, the production of *P. monodon* brood stock in captivity, and the first export of that species to Europe (specifically, France) in April 1992. During that experimental period, NPC produced a total of 2,245 kg of shrimp.

The third stage of commercial operations began in 1996 with the development of a fully integrated, semi-intensive farm, which included hatcheries and 110 grow-out ponds (with an average area of 10 ha per pond), a processing plant, brood stock ponds and an aquaculture laboratory. Until 2006, NPC focused on breeding, larvae rearing, and a 50,000 tonnes per day (tpd) feed mill. With 11 shrimp farms in a total area of 2,500 ha, production capacity touched 12,500 tpd.

In Phase II of planned activities for the period 2006–2010, NPC hopes to spend an estimated US\$150 mn to build 15 farms with a total grow-out area of 3,500 ha, and a production of 17,500 tonnes of shrimp, projected to touch 30,000 tonnes annually.

NPC is currently staffed by an international workforce of over 2,000 specialists and workers from more than 25 countries. In order to implement Phase II of the development of its shrimp hatcheries, grow-out and processing plants, shrimp-feed mills and the earthworks departments, the NPC management expects to hire additional, high-calibre professionals from around the world. To cater for this culturally diverse workforce, NPC has established a mini-township for its staff.

The company has also started a programme, jointly with the King Abdulaziz University, to train Saudi youth and encourage them to join NPC. The company has entered into exclusive agreements to distribute its products internationally, under the brand name ‘Al-Watania’, both in the countries of the Middle East, and to the US and Europe. 3

This corporate profile is by Izzat Feidi (ifeidi@thewayout.net), a fisheries consultant based in Cairo, Egypt, who was formerly with the FAO

Fight over, but war goes on

Chilean communities unite to fight for their livelihood rights against big business interests represented by a giant pulp firm

Saturday, 9 September 2006, was to have been a big fiesta day in Mehuín, a coastal town in southern Chile, home to a small fishing community of approximately 1,700 people. However, poor weather conditions put paid to that plan. Instead, the Mehuín Union of Women Workers was forced to limit its cultural events to a small gathering in the offices of the fishermen's union.

A few weeks earlier, on Tuesday, 15 August, fishermen from Mehuín had braved rough seas in their small launches to block vessels chartered by the Chilean industrial giant, the pulp firm called Celulosa Arauco Company (Celco). These had been commissioned to carry out an environmental impact assessment (EIA), a prerequisite for discharging waste from the Valdivia pulp mill into the sea.

According to the Chilean Navy, called in to "ensure the security of human life at sea, to maintain order and security in the maritime zone", the "sea and wave conditions in the area, with waves over 2 m, did not guarantee the safety of operations necessary to carry out these studies".

The Navy report also noted the presence of "several fishing boats, carrying rocks and lances; both these conditions pose risks for human life at sea, so it was decided to postpone work until conditions improve".

The 'Battle of Mehuín' was but a single skirmish in a war that has been waged for over 10 years on many fronts, with much at stake, and with a great amount of collateral damage.

It has been a dirty campaign too, with allegations of complicity, bribery and intimidation. For the moment, there is a

tense ceasefire, but hostilities could be resumed at any moment.

According to Juan Carlos Cardenas, Director of Ecoceanos, an independent, non-governmental organization (NGO) based in Chile, working to promote conservation and sustainable management of coastal and ocean ecosystems, "Local communities face a desperate situation of institutional malfunction, where the authorities have not been even-handed." Given the complete lack of trust in the way environmental regulations are implemented, Cardenas explains that a new strategy is required. "Celco operates an export-oriented industry, requiring international markets. We are making an international appeal to stop this barbarous proposal to discharge toxic waste into an area that is an important fishery. The political fallout could be high," warns Cardenas.

The saga being acted out in Chile's southern regions pits local communities of fishers and indigenous people against the might of Celco. The company, whose consolidated sales represent five per cent of Chile's gross domestic product, is owned by the Angelini family's forestry business, and forms part of the giant Copec Oil Company (www.copec.cl), Chile's largest privately owned company. With consolidated assets worth \$6,432 million, 68 per cent of which form part of their forest ventures, Copec controls around 70 per cent of the Chilean pulp used for newspaper production.

Large footprint

Celco's Valdivia plant is located in the small commune of San José de la Mariquina, some 800 km south of Santiago, but its footprint is both large and heavy. Production at the plant requires

The Battle of Mehuín

At 8 a.m. on Tuesday 15 August 2006, Mehuín was awoken by the alarm calls of watchmen on the hills, announcing the arrival of vessels chartered by Celco. Twenty minutes later, Mehuín fishermen were in their boats and on the scene. They were joined by 30 more launches from the *caleta* of Queule, in the South of the IX Region, who also oppose the duct.

In addition to the two large tugboats, the fishermen found themselves facing the Navy patrol vessels *Chiloé* and *Antofagasta*, and a warship with more than 100 marines, including hooded men with weapons ready. All this was filmed on video by the fishermen (see <http://www.mehuín-Celco.blogspot.com/>), and shown in the local community, provoking outrage at the Chilean Navy for its overt support of Celco.

Accounts of the battle vary. Fishermen accuse the Navy of heavy-handed tactics and intimidation, with shots being fired indiscriminately by hooded gunmen. By 5 p.m., thanks to the interference by the fishermen, the two tugboats had withdrawn northwards, and the Navy vessels to Valdivia.

For their part, the Navy claimed that they were called in by the authorities in San José de La Mariquina to maintain safety at sea. An official statement noted that the Navy had been called in to “ensure the safety of the personnel and equipment of Ultragas S.A. while they carry out

the technical investigations necessary to prepare their EIA”.

Eliab Viguera, the spokesperson for the Marine Defence Committee, questioned the role taken by the Navy in the conflict, pointing to the lack of transparency, and the lack of any official announcement prior to their surprise deployment.

Joaquín Vargas, President of the Mehuín Fishermen’s Federation, pointed out that the swift action by the fishermen had prevented the environmental impact assessment (EIA) required by Celco being carried out.

“The Celco vessels were 3-5 miles outside the area where they have to carry out their studies. But they should not be allowed to enter there, because it is a management area belonging to the fishermen. We are defending our right to work in a pollution-free environment. It is the role of the State to ensure that, to safeguard the patrimony of all Chileans, as stated in the Constitution.”

According to Vargas, the EIA carries absolutely no guarantees for the fishing community, as the projects are always approved. “Where cellulose plants operate with EIAs, the results are plain to see. Close by, the situation in the Cruces river in Valdivia is a case in point. There used to be swans there, but they have flown away. However, we fishermen have no wings to fly.”

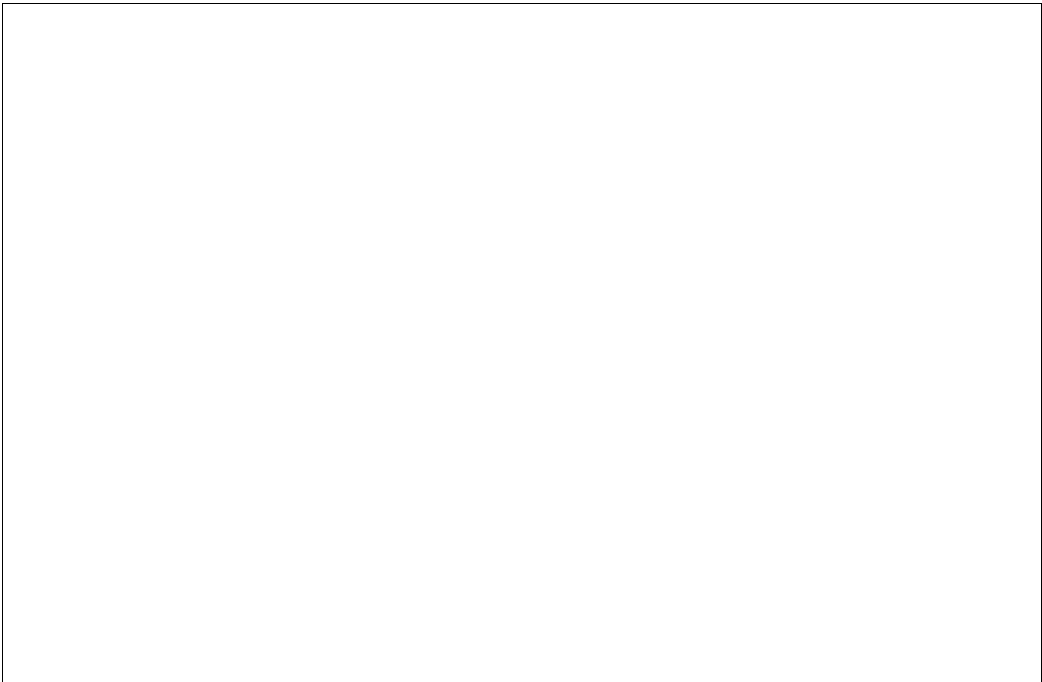
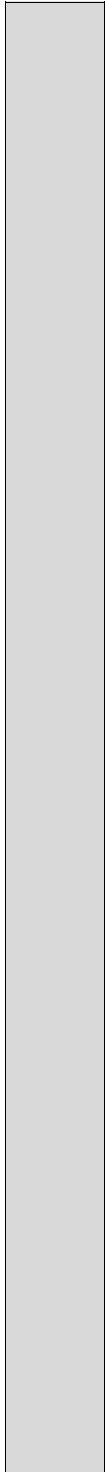
thousands of hectares of pine and eucalyptus plantations, with an annual demand for over 2,000 ha worth of production.

Using 950 l of water per second for fibre whitening, it discharges a similar quantity of liquid residues and byproducts. Its potential impact on local communities, particularly on the indigenous Mapuch, whose traditional livelihoods depend on access to aquatic and forestry resources, is enormous.

The Valdivia plant is seen locally as the tip of the iceberg of a development that will generate widespread misery, environmental destruction and the devastation of Mapuche communities, leading to the displacement of thousands of indigenous people and poor *campesinos*

(farmers or peasants). Back in the 1980s, Celco conceived the ‘Valdivia Project’—the construction of a new cellulose plant, with an investment of US\$1,300 mn. According to Ecoceanos, the installation of the cellulose plant was aided “by government policies that favour the export of raw materials with low value added; that subsidize plantations of exotic species; that protect private investment; that do not recognize the historic rights of indigenous people to the areas where single-species plantations of pine and eucalyptus have been established; and that are blind to the need to protect native woodlands.”

Commenting to the Inter Press Service (IPS), Lucio Cuenca, the Director of the Latin American Observatory for Environmental Conflicts (OLCA),



observed: “In Chile, political decisions continue to take precedence over technical, environmental and social considerations. What we are seeing here is a dictatorship of investments and of power of the big corporations, with the government’s complicity.”

The project was finally approved in 1996, with Celco’s waste disposal options being either to discharge into the Cruces river, or into the sea some 35 km away. Discharging their effluent into the river required the installation of expensive tertiary waste treatment equipment. The cheapest option for Celco was, therefore, to dump its effluents into the sea by constructing a pipeline.

Celco targeted the Bay of Maiquillahue as the place to discharge the factory waste. Around 600 families in Mehuin depend on fishing for their livelihoods. There are also 13 other communities in the surrounding area, comprising some 3,000, mainly indigenous, Mapuche-Lafkenche people, who depend on fishing and farming. The bay area is also a favoured local tourist spot, and fishing and tourism are important local activities, but their future is threatened by the plans to dump toxic waste in the bay.

The planned route for the pipeline goes right through the areas used by the indigenous people and claimed by them

as their traditional territories. Anticipating opposition from local groups, Celco has applied for mineral prospecting rights. This entitles the company to privileged access to these areas, and effectively prevents any other economic, infrastructure or cultural initiatives from coming up. The owners of the land must facilitate the activities of those who are granted such rights. Celco’s objective in gaining these rights is to pre-empt the local communities from doing so and blocking their duct.

Thanks to the combined campaigns and actions of the local communities, indigenous people, NGOs and environmentalists, the implementation of the EIA has so far been blocked, and the pipeline project has not been able to proceed.

On 16 October 2006, Fernando Meza, Chair of the Environmental Committee of the Chilean Chamber of Deputies, declared: “The (Celco) company came to the region promising to generate employment with a clean industry that would promote development... but instead they caused considerable environmental damage to the River Cruces wetlands. Then, not only did they attempt to discharge their waste into the sea, but they also proposed to construct a waste pipe across 30- 40 km of indigenous community territory, which they decided to install without carrying out an

environmental impact study that requires that all those affected be consulted.”

According to local environmentalists, the factory wastes destined for the sea “contain high levels of organochlorides, highly carcinogenic and non-biodegradable chemicals.” They claim that these will accumulate “in the tissues of filter feeding organisms (like the local shellfish resources) and fish, and would then be passed on to the humans who ate them. Due to their toxicity, persistence and bioaccumulation, these head the list of substances that are most noxious to the marine environment.”

Fernando Meza adds: “We know that other, closed-circuit technologies exist that purify the water so that it can be reused as many times as required, rendering it harmless, and this simply requires greater investment. I can’t understand how a company that earns US\$200,000 daily or around 100 mn pesos, does not have the wherewithal to invest and leave everyone in peace, without trying to dump its waste in the sea.

There is no doubt in my mind that this will alter the ecosystem. If heavy metals were found in the organs of swans then it is logical that this will surely happen with the marine fauna. Above all, we have a duty to protect the resources.”

The atmospheric pollution of the plant is also considerable. Ecoceanos reports that the Valdivia plant incinerators produce 12 tonnes of sulphur dioxide daily. When in contact with the constant precipitation of the region, this produces acid rain that pollutes the native forests, plantations, animals and the people who consume the food from the area.

According to Ecoceanos, “Investigations made by the authorities found that bad odours were not the only problem. The plant had absolutely no systems for controlling, reducing or monitoring the gases produced. Moreover, the plant had begun operating in February 2004 with no inspection from the department of public works, without any payment of licence fees, and with no public health authorization, in flagrant disregard of official requirements”. According to

another source, “Celco attempted to enter Mehuín by land and sea in order to carry out their studies, but found an organized community that had managed to make a major part of the public aware of the issue. The government’s action was laid bare to the country and part of the international community. They looked on with concern at the environmental and indigenous conflicts and were able to witness the strong repression carried out in some Mapuche areas. Faced with imminent defeat, the company and the government negotiated a way out of the conflict: to approve the project with the initial alternative proposed in the first project, that of discharging effluents into the Cruces river, using a more modern treatment that would ensure minimal pollution.”

The factory was also found to have several additional waste pipes that were not included in the original EIA, which, according to studies carried out by the Austral University of Chile, contracted by the National Environmental Commission (CONAMA), were responsible for the deaths of hundreds of black necked swans and other animals, fishes, and aquatic plants in the Carlos Anwandter Nature Sanctuary.

This sanctuary covers more than 12,000 acres of wetlands along the Cruces river, and is an area designated as a wetland of international importance under the Ramsar Convention (Ramsar Site No. 222). The President of Chile, Michelle Bachelet, elected in December 2005, has yet to reveal her hand. Her environmental adviser, Manuel Baquedano, has described the pipeline project as “inevitable”, but the activities of Celco have now become a national issue, and will be subject to the scrutiny of the Chilean Chamber of Deputies.

Fernando Meza questions: “How can anyone decide that dioxins, toxins and all kinds of waste can be dumped in the sea here, but not there? The environment is a continuum and what happens in the north could affect the south. The local authorities have failed to understand that this is a national issue. It is not that we have become crazy about attacking Celco... we would do the same with any company that did not respect the

environmental laws, the communities and their way of life.”

While locally the combatants are preparing themselves for the next encounter, Juan Carlos Cardenas of Ecoceanos feels that the campaign must also be taken to Europe. “We are working with the International Collective in Support of Fishworkers, an organization that has strong ties with Chilean fishing communities and CONAPACH, the National Federation of Artisanal Chilean Fishermen. We plan to provide information to the European Parliament and other democratic bodies, which, along with the provisions of the European Union(EU)-Chile Association Agreement, can be used to challenge Celco in the market place,” he says.

The aims of the EU-Chile Association Agreement include “to encourage conservation and improvement of the environment, prevention of contamination and degradation of natural resources and ecosystems, and rational use of the latter in the interests of sustainable development” (Article 28, Title II, Part III (Co-operation)). Cardenas, therefore, envisages establishing a process for formal dialogue between coastal communities, artisanal fisheries, social organizations and indigenous people in Chile and European civil society organizations, integrated into the work of the EU-Chile Joint

Parliamentary Committee. CELCO’s activities work against the achievement of this objective, and this could lead to a blacklisting of their products in Europe as well as a consumer boycott. As CELCO’s paper products are mainly destined for the export market, a consumer boycott could have a significant effect.

In Chile, the outcome of the work of the Environmental Commission of the Chilean Chamber of Deputies could also play a vital role in influencing what action is taken both locally and in Europe.

Cardenas also identifies the Organization for Economic Co-operation and Development (OECD) as a potential ally. “The OECD has been very critical of Chile’s environmental record, where Chile’s environmental and labour standards fall short of the OECD criteria. We plan to put the Celco project before the OECD,” says Cardenas. It remains to be seen whether due process at the national level, and international pressure can be combined to safeguard Chile’s marine environment and the livelihoods and well-being of the current and future generations that depend on it.

This report has been compiled by Brian O’Riordan (briano@scarlet.be) from various sources, including the websites of the Rain Forest Movement (http://www.americas.org/item_29197), Ecoceanos (<http://www.ecoceanos.cl>), Mawida Ngen (<http://mawidangen.blogspot.com/>), José Araya Cornejo (<http://www.wri-irg.org/nonviolence/nvse23-es.htm>) and Conapach (www.conapach.cl)

Looking out for the future

A recent conference held in Anchorage, Alaska, focused on the future of Alaska’s small fishing communities

Alaska may be the 49th State in the United States of America (US), but its geographic isolation, cultural diversity and residents’ dependence on fish and wildlife resources make it unlike any other State in the US. From coastal communities bordering Canada, north, to communities above the Arctic Circle, subsistence and commercial fishing are the backbone of the rural economy in Alaska. In many ways, Alaskans strongly relate to people in the Arctic and developing nations who are heavily dependent on fish and wildlife resources for economic and subsistence purposes.

A two-day conference recently held in Anchorage, Alaska, titled “Alaska’s Fishing Communities: Harvesting the Future,” focused on how fishermen, community residents, local governments and other stakeholders could work together to ensure that this vibrant fishing economy continues for future generations.

Over 150 Alaskans from 29 communities travelled to Anchorage (mostly by airplane, as Anchorage cannot be reached by road from most of the represented communities) to participate in the discussions.

Chandrika Sharma, Executive Secretary of the International Collective in Support of Fishworkers (ICSF), provided the keynote address at the invitation of the conference steering committee, which comprised representatives from government, universities, industry and non-profit organizations.

The most surprising aspect of her presentation, “*Rural Communities in a Global Marketplace: Can Fisheries be a Part of Community Sustainability?*”, was the degree of commonality between issues

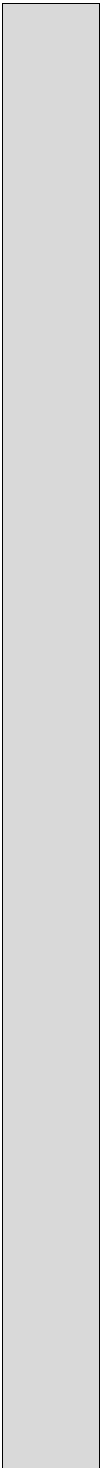
facing fishing peoples from across the globe and those from Alaskan fishing communities.

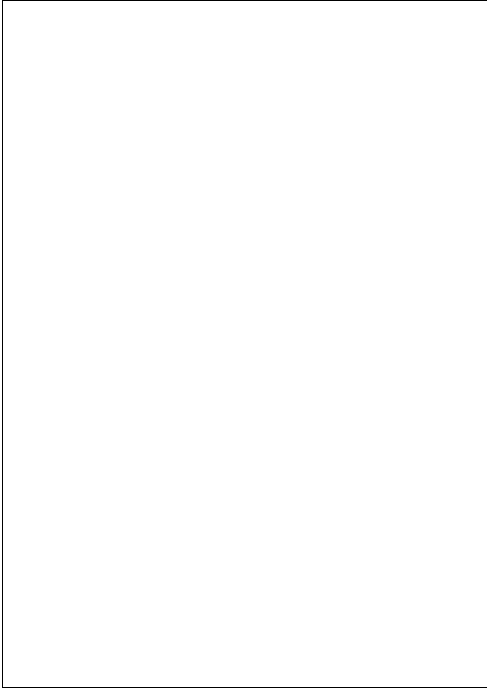
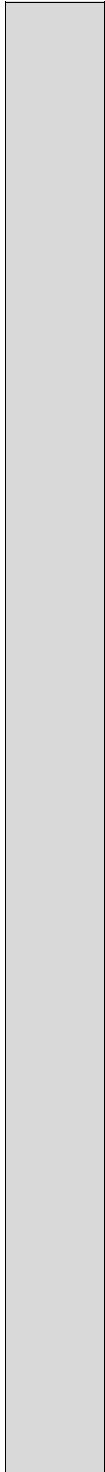
Alaska is the only US State located in the Arctic. It is 1,482,970 sq km in area, about half the size of India, with 10,686 km of coastline. About 660,000 people live in Alaska, 18 per cent of whom represent 11 distinct Alaska Native cultures. Approximately half of all Alaskans live in the urban centre of Anchorage. The remainder of the population lives in the smaller cities of Juneau and Fairbanks, or in one of over 80 geographically isolated towns and villages from Ketchikan in the southeast, to Barrow above the Arctic Circle. While natural resources provide a vital source of food in these rural villages, the cost of energy to heat homes, provide electricity and fuel transportation to access nearby resources are often the primary issue for these communities. Fuel costs in these villages are often four times higher than in urban Alaska.

Fisheries, both subsistence and commercial, is the largest private employer in the State and a major economic force. Statewide, Alaskans eat over 650 kg of wild fish and wildlife per person annually. Commercial fishing (ex-vessel value) in Alaska is valued at over US\$1 bn per year, the majority of which is generated by salmon, crab, halibut, cod, pollock and other groundfish fisheries. The wild salmon fishery, in which thousands of Alaskans participate each year, was valued at over US\$300 mn in 2006, with a harvest of 140 million salmon. Five species of Alaska salmon are harvested in 26 different areas of the State.

Primary focus

A primary focus of the conference was on ways to retain access to fish resources by local community residents and future





generations. Alaska’s fisheries are regulated by either the State of Alaska and/or federal law, since fish harvested beyond three miles of the coastline are considered “federal” or owned by the American public.

As a result, while federal law mandates that impacts on fishing communities are considered during the development of management regulations, the State of Alaska’s Constitution mandates that no preference be given to specific individuals, groups or communities in State-managed fisheries. A number of quota share programmes have been developed in the federal system, while the State manages access primarily using a licence limitation system, in which licences are transferred among fishermen on the open market. This dual management system in Alaska’s waters can be both confusing and contradictory.

Fisheries managers in both of these systems have recognized a drain on locally owned access over the last few decades. At the same time, the value of access privileges has increased significantly, making it more difficult for young people to start a fishing business. Recognizing that loss of community-based access is equivalent to seeing a small local business shut shop, local community and tribal governments have recently focused on how to provide

for long-term access within the community.

Two broad approaches to providing for continued fisheries access by communities were addressed during the conference. These included: (i) direct provisions or programmes implemented by the government; and (ii) increased education and tools that enable retiring fishing business owners to transfer their assets within the community. Quota share and licence-based systems were specifically addressed under the first approach, as many participants recognized that the value of quota share or licences has increased dramatically over time, making it more difficult for a person to enter the fishery. It was noted that including communities in a share-based system should be done during the development of the initial programme, such that the increased price of entry does not preclude the purchase or use of community shares in the future (see Box). Limited duration of quota share, as opposed to granting shares in perpetuity, might also allow managers to adjust a programme periodically, to ensure that community access and other potential goals have been reached.

Education and creative financing were the primary examples of the second approach to supporting continued community access to fishing privileges. Bruce Jones, City Manager of Petersburg, Alaska, noted that his community was looking at ways to educate young people about opportunities in fishing, and how to develop a business plan to buy into a fishing business.

In addition, there are financial tools and support services available to help fishing business owners transfer their assets upon retirement. Linda Behnken of Sitka, and Eric Rosvold of Petersburg, both brought forth ideas on how to ensure that crew members were able to use their experience to buy into eventual ownership of a fishing business.

Expanded participation
Behnken advocated the design of management systems that “focused on fostering sustained or expanded participation by independent community-based fishermen.” She noted

Community Quota Programme

- The existing halibut and sablefish IFQ programme was implemented in 1995; quota share (QS) for use on catcher vessels was primarily limited to individuals who must be on board the vessel.
- Since implementation, much of the QS has been consolidated, and an out-migration of QS has been realized by smaller, rural communities.
- The Community Quota Programme (CQP) amended the IFQ programme in 2004.
- The CQP allows 42 eligible communities on the Gulf of Alaska coast to form non-profit entities to purchase, hold and manage catcher vessel QS.
- The purchased QS generates an IFQ permit, which authorizes the holder to fish a specified number of pounds of fish in the area.

that owner-on-board provisions are essential to this design, to ensure that resident fishermen continue to be tied to the harvest of the resource.

A substantial portion of the conference was spent in small group discussions with coastal residents, fishermen and fisheries managers. These discussions highlighted a common need for community residents to work together at the local level to define fisheries goals for their community, thus creating a 'bottom-up' management system. In Alaska, while many issues are shared across the State, the broad cultural, geographic and resource differences make it impossible to implement a 'one-size-fits-all' approach. Instead, participants focused on methods that could be used to identify the primary priorities, opportunities and assets within a community, to develop a plan to address and implement a community's goals. The needs of fishermen, crew members, processing workers, small support businesses and local governments should be well represented and taken into account during this process.

Both the United Nations Convention on the Law of the Sea (UNCLOS), and the Code

of Conduct for Responsible Fisheries of the Food and Agriculture Organization of the United Nations (FAO) talk about the need for recognition of the economic needs of coastal communities and the need for preferential access to traditional fishing grounds. Many conference participants expressed a desire to put in place management systems and approaches that recognize the importance of resource access to small-scale fishing communities, and a need to ensure that these communities are an integral part of the management and decision-making processes. We in Alaska are also taking responsibility for considering small coastal communities in the development of local and national fisheries policies.

More information on the conference can be found at its website at <http://seagrant.uaf.edu/conferences/fish-com2/agenda.html>, which has links to most of the presentations made. Another similar conference is planned for early 2008.

This report has been filed by Paula Cullenberg (pcullenberg@uaa.alaska.edu), Professor of Marine Science, Marine Advisory Programme (www.marineadvisory.org), University of Alaska, Fairbanks, Alaska, us, and Nicole Kimball (Nicole.Kimball@noaa.gov), Fisheries Analyst, North Pacific Fishery Management Council (www.fakr.noaa.gov/npfmc/), Anchorage, Alaska, us

Building a dialogue

Fishing professionals and journalists from four west African countries met recently to discuss the sustainable development of artisanal fishing

Nouadhibou is the fish capital of Mauritania. Artisanal fishing is particularly dynamic there—the town has an artisanal port where, towards the end of the afternoon, tired crews arrive to unload their cargoes of octopus or enormous croakers. A large part of the catch goes to the nearby processing factories, from where it is exported to Japan or Europe. In the port, women can be seen haggling with the fishermen over a few kilos of fish.

It was at the Nouadhibou Maritime and Fisheries Training School that, from 4-7 September, around 50 people met. They represented artisanal fisheries and the media in Senegal, Guinea, Mauritania and Benin, as well as non-governmental organizations (NGOs) and international organizations. The objective: to establish a dialogue to raise awareness on issues of responsible fishing.

The initiative for the meeting came from professional artisanal fishing organizations in Guinea (UNPAG, the Guinean National Artisanal Fishing Union), Senegal (CONIPAS, the Senegalese National Intersectoral Artisanal Fishing Council), and Mauritania (FNP, the National Fishing Federation Artisanal Section). The meeting was supported by Jade of Senegal and Proximités of Benin, two press agency members of the Syfia International network (www.syfia.info), and the Coalition for Fair Fisheries Arrangements (CFFA).

It all started when these organizations realized that the media coverage of fisheries issues does not reflect the views of west African coastal communities. Moreover, relations between coastal communities and the media, although generally positive, are far too sporadic and rare. In addition, these same

communities are poorly informed, both by their organizations and the media, about their own role in the development of sustainable fisheries.

The four days of discussions and exchanges focused on three topics: how the media are perceived by artisanal fishing communities; how these communities are perceived by the media; and the role that west African journalists can play in informing the different actors concerned about establishing responsible fisheries. The nature and scope of how professional organizations communicate internally and with the outside world were also discussed. The debates were fed by a series of communications, which included a presentation on the Code of Conduct for Responsible Fisheries of the Food and Agriculture Organization of the United Nations (FAO). Several films were shown: on marine pollution, on the devastation caused by monofilament nets, and on pirate fishing in Guinea. Also noteworthy was the intervention made by the Mauritanian association campaigning against HIV/AIDS, reminding participants that the health of coastal communities is also an issue for sustainable fisheries.

On how the media is perceived by fishing communities, men and women from the artisanal fishing sectors generally expressed positive views. For example, when the communities have a problem that the administration ignores, the media can help get their views across to the administration.

Main reproach

Fishermen and women processors had one major reproach: sometimes the media speak or write without any knowledge. The media needs to be more professional in understanding the specific nature of the fisheries sector. The condescending

Demands and Commitments

Participants at the “Workshop for West African Media and Artisanal Sector Professionals to Raise Awareness About Responsible Management of Fisheries Resources”, held in Nouadhibou, Mauritania, from 4 to 7 September 2006, recommended that:

Regarding the conservation of resources, States should:

- ensure that responsible fishing practices are respected, in accordance with the FAO Code of Conduct for Responsible Fisheries, and ban trawling, dredging and the use of monofilament nets in the coastal zone;
- take all necessary measures to safeguard the environment and the coastal marine ecosystem;
- implement all provisions necessary for transparency, monitoring and control of illegal fishing activities; and
- Make public, through the media, information about illegal fishing practices (details of vessels, crew, flag, fine imposed, ship owner, etc.) as well as the results of the penalties imposed

The Sub-regional Fisheries Committee (SRFC/CSRP) should:

- associate and directly involve artisanal fishing professional organizations in its activities, in the decision-making process and in monitoring its programmes. *(It is worth noting that soon after the*

workshop, the professional organizations that initiated it were invited, for the first time, to participate in a meeting of the SRFC to discuss artisanal fisheries management.)

Professional artisanal fishing organizations should:

- consolidate internal democracy and ensure transparency and good governance in their activities;
- strengthen the participation of women in their decision-making processes; and
- provide facilities for communication (fishermen’s centres, etc.), awareness raising, education, information, and training of artisanal fishing communities.

A communications strategy should be put in place for all activities undertaken in the fisheries sector, including:

- the creation of community radio programmes to inform the general public about fishing activities;
- publication of a regional paper devoted to all aspects of fishing;
- the organization of specialized training courses for the media on fisheries issues; and
- popularization of fisheries research results carried out by oceanographic and fisheries-related research institutions.

attitude of some journalists towards fishing communities was also denounced by some, as was the attitude of intellectuals towards those who work with their hands, particularly women fish processors, who are often illiterate.

The lack of communication between professional organizations and their members was also directly referred to as an obstacle in artisanal fishing communities being well informed.

Several factors should be taken into account to explain the media’s lack of interest in the sector. Artisanal fishing communities tend to be traditional

societies, with little in the way of novelty value that could attract media attention. The journalists commented that often, fishing professionals did not want to talk with them and there is a certain lack of trust.

The professionals explained that they are often afraid to speak, particularly on sensitive subjects, behind which are hidden important political and economic issues, such as the devastating impacts of illegal fishing in the coastal zone. “Everyone is fishing, the army is fishing, functionaries are fishing, ministers are fishing,” said one professional from the artisanal sector.

The media representatives emphasized that their profession lacked structure: there is no networking amongst journalists, and insufficient means, above all for the private media, which is partly responsible for the lack of training and specialization on fisheries issues. The need for the media to be profitable and to cover their costs was also raised. The artisanal fishing communities are often unable to pay for journalists to come visit their villages. Solutions must be found to this problem, either within the communities or outside. Nevertheless, to talk about artisanal fishing remains, as one participant noted, “a blast for democracy, because it provides a voice for those who have none”.

The question was raised about who should approach who. Should the professionals approach the media or vice versa? If the media have to go to the field, it is also important that the communities respond to their interests. In this regard, the artisanal fishing sector must show how its future is of concern to the society as a whole, particularly to consumers.

This was highlighted in the conclusions of the meeting: “In five years time, in 10 years time, whether alone or together, we would like to continue to eat these same fish that were served up during our stay in Nouadhibou, without being told that the price has increased because there is a scarcity, without being told that the species no longer exist...The issue of sustainable fishery resource exploitation is not the concern of artisanal fishing communities alone. It is a question of survival and sovereignty for all.”

On the role of the media in raising awareness on responsible fisheries, several avenues were explored, like the need to use language appropriate for interactions with coastal communities (using local languages, and greater use of the radio to disseminate messages, especially to people who are illiterate).

Several basic issues were put forward for the media to take up, like the duality within the artisanal fishery, and especially the need to balance exports with resource management and environmental conservation. The media

can play a role in influencing community behaviour, and promoting practices that are compatible with sustainable fisheries. The media should also highlight the importance of artisanal fishing in employment creation for deprived social classes with no training or expertise, or in the capitalization and popularization of experiences, good practices and innovations. For complex technical issues, like the agreement on hygiene or sanitary standards, journalists have a role to play in helping the professionals understand the issues that underpin technical questions. Finally, a strong plea was made to tailor the collection and dissemination of information to the interests of young people and children, as the future of the sector lies in their hands.

At the end of the four-day meet, the participants created a West African network of journalists for sustainable and responsible fisheries. 3

This report has been filed by Fernand Nouwligbèto, a journalist with Proximités (Benin), Madieng Seck, a journalist with Jade (Senegal), and Béatrice Gorez (cffa.cape@scarlet.be), Co-ordinator, CFFA (Belgium)

Disturbed waters

This article highlights how Venezuela’s potentially sustainable artisanal fisheries may become overexploited if not properly managed and regulated

Artisanal fisheries occupy a very special place in Venezuela. According to Presidential Decree 1524 of 2001, “Artisanal fishing can guarantee the sustainability of resources due to the low impact of the fishing gears used, and also due to its seasonal nature. Protecting artisanal fishing, as consecrated in Venezuela’s Bolivarian Constitution, is fundamentally a means to protect fishery resources and a way to ensure that these are not exploited in an excessive manner.”

Artisanal fishing directly employs around 40,000 people in Venezuela, and provides 400,000 indirect jobs in ancillary sectors. Artisanal fish landings represent 70-80 per cent of the total national annual catch of around 500,000 tonnes. Recognizing this importance, Articles 20 and 21 of Venezuela’s 2001 Fisheries Law (Ley de Pesca) provide special protection for fishing communities and their settlements and fishing grounds, both inland and at sea. Some resources are assigned exclusively to the artisanal fishing sector, including the round sardine (*Sardinella aurita*), the turkey wing clam (*Arca zebra*), the Caribbean pearl oyster, various sedentary molluscs, and the shrimps and crabs found in bays, lagoons and coastal marshes. Article 21 also reserves all fishery resources located within the 6-mile coastal fringe exclusively for artisanal fishing.

If artisanal fishing dominates Venezuela’s fishery, fishing in the State of Nueva Esparta takes pride of place in the country’s fishery economy, although it may be better known for its tourism industry. Located in the southeastern Caribbean, the State consists of three main islands: Margarita, Coche and Cubagua. Of the population of 300,000, around 10,165 are fishermen, living in 59 rural and

urban fishing communities. The State’s fishing sector employs around 114,086 people. The region has had strong ties with the sea since time immemorial. Prior to the Spanish conquest, the indigenous Guaiquerí and Caribe people specialized in the pearl oyster fishery, and caught fish for their own consumption. In many communities, fishing practices appear to have changed very little since pre-Colombian times. Stone and bone hooks have been replaced by metal, and natural fibres by artificial fibres.

Although the waters of the Caribbean are generally not very productive, they are some relatively rich fishing areas, such as those off the northeastern Venezuela coast. These account for roughly 60 per cent of Venezuela’s marine fish catch. Of the two main seasons, the period from December to April is relatively dry, with strong winds, great upwellings and high productivity. The May-November period is a rainy season of light winds, with much weaker upwellings and productivity.

Fish catch statistics show a gradual upward trend until 2000. However, the 21st century has seen a change in the fortunes of the fishing sector. A case in point is the fishery for sardines, where very low abundance on the fishing grounds provoked something of a national crisis in the first part of 2006. The reasons for the disappearance of the sardine have been greatly debated, with fingers being pointed at unregulated industrial-scale fishing for fishmeal to meet the feed demands of local shrimp aquaculture; increasing demands from export markets; and climate change.

Gear used

The sardine fishery provides 30-40 per cent of Venezuela’s fish catch. The fishing gear used include encircling nets operated



from beach-based boats (*tren sardinero* and *chinchorro playero*), 1,500 m long and with a maximum opening of 40 m.

Sardine purse-seines (*tren de argolla sardinero*) are also used, with a maximum length of 400 m and a maximum depth of 40 m. The fish-catching subsector consists of small entrepreneurs who own the fishing units (nets, vessels and ancillary equipment). The share that the fishermen receive from the catch is not sufficient to meet their basic needs, which explains why this activity is less and less attractive for them.

Not only does the sardine fishery provide significant employment, but sardines are also a major part of the Venezuelan national diet. More than 90 per cent of the Venezuelan sardine catch is consumed locally, providing a much-needed and affordable source of dietary protein and other essential nutrients in the basic food basket. Consumed by around 13 mn Venezuelans, canned sardines are the lowest-cost source of animal protein: cans of 170 g sardines in oil, tomato sauce or chili sauce sell for US\$0.25 each, making them a popular item for people with low incomes.

Overall, the Venezuelan sardine sector provides around 20,000 direct jobs, and around 140,000 indirect jobs. There are six large-sized traditional canning factories. Additionally, there are several small-scale canning factories, some freezing plants, various filleting units, and lorry drivers who transport the sardines, which altogether provide a further 7,000 direct jobs. Considering the average family size of five, around 100,000 people thus derive benefits from the sardine sector.



This article, by Leo Walter González (leonora@movistar.net.ve), Professor, Instituto de Investigaciones Científicas, Universidad de Oriente Núcleo de Nueva Esparta, Isla de Margarita, Venezuela, has been translated by Brian O’Riordan (briano@scarlet.be)

Small-scale fisheries centre stage

A new report attempts to use data to help put small-scale fisheries at the centre stage of fisheries research

The Fisheries Centre of the University of British Columbia, Canada, has released a research report on small-scale fisheries around the world. Titled *Bottom-Up, Global Estimates of Small-Scale Marine Fisheries Catches*, the report has been written by Ratana Chuenpagdee, Lisa Liguori, Maria L.D. Palomares and Daniel Pauly.

Part of the Centre’s *Sea Around Us* Project, the report is an attempt to help put small-scale fisheries at the centre stage of fisheries research. It aims to provide bottom-up (national) estimates of small-scale fisheries catches and related statistics for each maritime country, and then aggregate them at the global level. These data will allow dealing with small-scale fisheries at the same scale as large-scale fisheries, and thus enable more complete analyses of fisheries than has been possible to date. Besides catch data, the report provides national definition of small-scale fisheries, gear used, catch composition, number of fishers, number of boats and involvement of women and children, from sources such as Fisheries Country Profiles of the Food and Agriculture Organization of the United Nations (FAO) and other reports and documents.

The database contains information about small-scale fisheries in 140 coastal countries; about 60 per cent of the information is from non-FAO sources. About 70 per cent of the countries characterize their small-scale fisheries using boat size, with the most common categories being less than 10, 12 or 15 m, or between 5-7 m in length. Other characteristics used are gross registered tonnage (GRT), engine size and types of gear. Overall, despite the uniqueness of small-scale fisheries in each location, demarcations between small-scale and

large-scale fisheries are generally similar. More importantly, there are sufficient commonalities among countries in how they define and characterize small-scale fisheries that it is possible to generate data for countries without information from those with data, based on consistent rules.

In his foreword, Daniel Pauly, Director of the Centre, writes: “Working on small-scale fisheries often means being torn between two opposites. On one end are those who think that this is a waste of time because, ‘after all, industrial fisheries in the South and the North provide the bulk of the fish’ [a true, and typical, quote, from an author who shall remain unnamed].”

“This standpoint seems to be justified because for most countries the official statistics do not identify small-scale fisheries, suggesting such catch, if any, is negligible,” Pauly continues.

“At the other end are cultural anthropologists and other social scientists, asserting in thesis after thesis and paper after paper that small-scale fisheries are important in the villages they studied, but numbers on catch, fishing effort and other metrics cannot be given, because everything is so complex. Indeed, one is often told by social scientists that catches are not the issue, but instead the catching itself, and the culture that develops around it.

Missing numbers

The first line of these arguments will be perceived as being correct as long as hard numbers are missing which would document in a compelling fashion that small-scale fisheries, rather than being marginal activities conducted by marginal people, are a vibrant part of the rural economy of numerous countries,



providing livelihood to millions of people, besides increasingly feeding into national and international markets.

The second line of arguments, while central to the discipline of, for example, cultural anthropology, indirectly contributes to the marginalization of small-scale fisheries. In the excitement of documenting unique aspects of the maritime culture they study, and of describing its specialized systems of resource use, the larger context is often ignored, and the small-scale fishers and their families are not seen as actors on the national or international stage.

Both of these lines of arguments can be overcome by making the case that small-scale fisheries, rather than being a marginal sub-sector, represent, in most countries, most of the people working in fisheries, and generating nearly half of the fish and invertebrate catch, often of high values, destined for human consumption. The numbers assembled in this report support such a case.

Moreover, because they use far less fuel energy than industrial fisheries per tonne of fish landed, small-scale fisheries may point to, or even be, the future of fisheries in a world economy shaped by high fuel cost.

The conclusions of this report are tentative, however, because the database upon which they are based covers the world very unevenly. This can be addressed by exposing the content of this database to a wide audience, from which the complements and corrections will emerge that will make this database more complete and reliable, and, hopefully, more useful," concludes Pauly.

More information on the report is available at http://www.fisheries.ubc.ca/publications/reports/report14_8.php. The entire report can be downloaded from http://www.fisheries.ubc.ca/publications/reports/14_8.pdf

Don't can everything

This exchange between two observers of the artisanal fishing sector in two continents stresses the need to add value to the sector's products

Far from the miserable images often portrayed of artisanal fisheries and traditional fishing communities, the sector can be a dynamic one, capable of innovation and, if given appropriate attention and support, perhaps the best option for the future of sustainable fisheries both in the North and in the South. This potential was highlighted in the article on the revival of the line fishery for tuna in the Bay of Biscay, titled *Other Ways of Fishing*, published in SAMUDRA Report No. 44, July 2006.

Here, in this dialogue, two privileged observers of the evolution of the artisanal fishing sector, Ahmed Mahmoud Chérif from Mauritania and Marc Allain from Canada, react to the issues raised in that article and discuss the opportunities offered by artisanal fisheries.

Chérif was Fisheries Director in Mauritania between 1976 and 1980 and General Secretary of the Ministry of Fisheries and Maritime Affairs during 1986 to 1988. Today, he is the President of the non-governmental organization (NGO) Pêcheops (Social Development through Ecological Fishing).

Marc Allain, former Senior Policy Adviser to the Canadian Council of Professional Fish Harvesters (CCPFH), is now a consultant to NGOs and environmental groups on sustainable fisheries development.

Allain: The important link between good product quality and the value of the landings of the artisanal fleet, as highlighted in the SAMUDRA Report article on line fishing for tuna in the Bay of Biscay, reminds me of our reflections in Canada after we carried out two exhaustive studies on the socioeconomic evolution of Canadian fisheries over the

previous 15 years. These studies showed that the value of fish landings had increased considerably following the collapse of demersal fish stocks in 1992 because the industry focused on fresh fish (such as fillets and crab), and live products (like lobster). We had moved from a situation of high-volume/low-value, associated with industrial production, to a situation of low-volume/high-value associated with artisanal fishing.

Cherif: It is the same in Mauritanian fisheries, where superior quality and good potential for value addition is an intrinsic characteristic of artisanal fishing. Thus, in 2005, octopus caught by the artisanal sector sold for US\$200 per tonne more than the product caught by freezer trawlers and frozen at sea. As for high-value demersal species, only the artisanally caught products meet the quality conditions required for export to the European markets, attracting average prices of 4.5 Euros per kg. The same fish in frozen form caught by the industrial fleet gets less than 2 Euros per kg. The volume of fresh-fish exports from artisanal landings is as much as 6,000 tonnes per year.

In a general way, as shown by several sectoral studies, the value added locally by artisanal fisheries accounts, on average, for 85 per cent of their total turnover, while in the Mauritanian industrial sector, the rate is about 50 per cent, and much lower in foreign industrial fishing operations.

Allain: It must be emphasized that it is often misleading to talk about the "value added" of fish processing because, in most cases, processing adds no real value to the product. As soon as it comes out of the water, fish begins to lose value. If we really want to optimize the value of the landings,



then we must keep the fish alive or chilled for as long as possible so as to ‘preserve’ its value.

Focusing on live or chilled products favours an artisanal fishery for several reasons. Firstly, the fishing trips in artisanal fisheries are short in duration, and close to the landing centres, which allows products to be kept chilled or even alive with minimal investment (using ice and insulated boxes). Secondly, the gear used in artisanal fisheries (longlines, traps, etc.) allow fish to be caught alive and in a very good condition. Finally, lower catch rates allow for improved handling on-board and this preserves the value of the product. But the trend towards fresh or live products may also have serious adverse knock-on effects for employment. Losses of shore jobs, particularly amongst women, have not been fully compensated for by the increasing crew sizes needed for better on-board handling.

Cherif: It’s as you say: The amount of value added is not necessarily linked to the degree to which the product is processed. In Mauritania, we have two examples that illustrate this. The link between value added and processing is very clear in the fishery for grey mullet. One tonne of mullet landed by the artisanal fleet and processed for the extraction of *poutargue* (dried and salted mullet eggs) can yield, on average, close

to US\$4,500, providing 91 per cent of the value added on turnover. One tonne of the same mullet from the industrial fishery, in frozen form and not suitable for the production of *poutargue*, when exported, attracts a price well below US\$300.

To provide an idea about scale, the volume of fish landed by the artisanal sector—around 14,000 tonnes—provides a total turnover, after processing, of nearly US\$62 mn. Meanwhile, the industrial catch of mullet, of around the same volume, brings in only US\$4 mn. This example illustrates how much is wasted by the industrial fishery for mullet.

By contrast, for other products like grouper (*merou*) and bream (*dorade*), processing provides no added value. Thus, the export of fresh grouper and bream fillets provides much lower returns than the export of the whole fish fresh. It is also well known that fishermen get a much better return by selling their sardines frozen whole, than by processing them into meal and oil.

Allain: The other big issue for the future is the fact that wild fish will become an increasingly rare commodity. Fresh wild fish, of excellent quality, will become a luxury high-cost product that will distinguish it from cultured fish. It is questionable whether artisanal fishing communities will be able to benefit from this trend or if they will be marginalized

by all the processes associated with the privatization of resource access. This also will have consequences for the poorest sectors, which currently depend on wild-caught fish for their own consumption.

In the case of Canada, the processors have more or less abandoned the industrial approach and are tireless in the efforts to obtain firm resource property rights. And all this will be played out within the exclusive economic zones (EEZs), which is where most of the fish are. Hence the importance of fisheries policies and the provisions made for the artisanal fishing sector, which can use economic arguments to support their demands for special protection.

Cherif: In Mauritania, the limited catching capacity of the artisanal fleet is often used to support this line of argument. But, as Marc points out, the more valuable species are mainly coastal, and their main concentrations are easily accessible to artisanal fishing.

Allain: It's clear that a fresh/live strategy may not be applicable in every case, as Ahmed Mahmoud points out, for example, where there are large volumes of migratory pelagics or when the fishery targets fish at the end of their life cycle, as in the case of salmon in our part of the world, where processing is vital for product conservation.

What is deplorable, and which is often the case, is that government economic planning strategies are not aware of the potential of artisanal fishing as a way to maximize the value of fishery resources, which they tend to scorn, believing that everything must be put in a can to get the highest return. 3

This dialogue has been constructed by Béatrice Gorez (cffa.cape@scarlet.be), Co-ordinator, Coalition for Fair Fisheries Arrangements (CFFA), based on email exchanges



Tuna fisheries

Cashing in on tuna

A pioneer's "social accountability" programme has developed a new generation of entrepreneurs in the Philippine tuna handline industry

The Philippines is a net exporter of fish, both in terms of value and volume. At the forefront of the fisheries export industry is tuna. The Philippines tuna industry is ranked second in the production of canned tuna and seventh in fresh/frozen tuna worldwide. Tuna exports crossed US\$150 mn in 2004, and tuna accounts over 200,000 tonnes of fish protein in the domestic market.

The tuna industry in the southern Mindanao region has an annual value of about US\$250 mn. Ninety per cent of the fishing and ancillary companies are based in General Santos City. The average daily landing is 1,000 tonnes. The tuna industry employs around 100,000 fishers and fishworkers.

With a fleet of 2,500 traditional handline fishing boats, the tuna handline sector is one of the biggest employers of the city. The 30,000-40,000 handline fishermen support a total of 200,000 family members. Tuna handline fishers land an estimated 30,000 tonnes of tuna annually, earning US\$ 80 mn.

Each tuna handline fishing boat has a gross tonnage of 15-60 tonnes. The boats operate in the fishing grounds of Mindanao Sea, Sulu Sea, Moro Gulf and Tawi-Tawi islands and in international waters. Fishing operations can last as long as 25-45 days, depending on the distance of the fishing ground.

The sector still employs the traditional passive fishing gear of single hook-and-line, making it labour-intensive. Each fishing boat, depending upon the size, can accommodate 10 to 23 crew. Starting operational expenses per trip can be as high as PhP100,000-250,000 (US\$2,000-5,000), besides the cost of the

fishing boat of around PhP2.5-3.5 mn (US\$50,000-70,000).

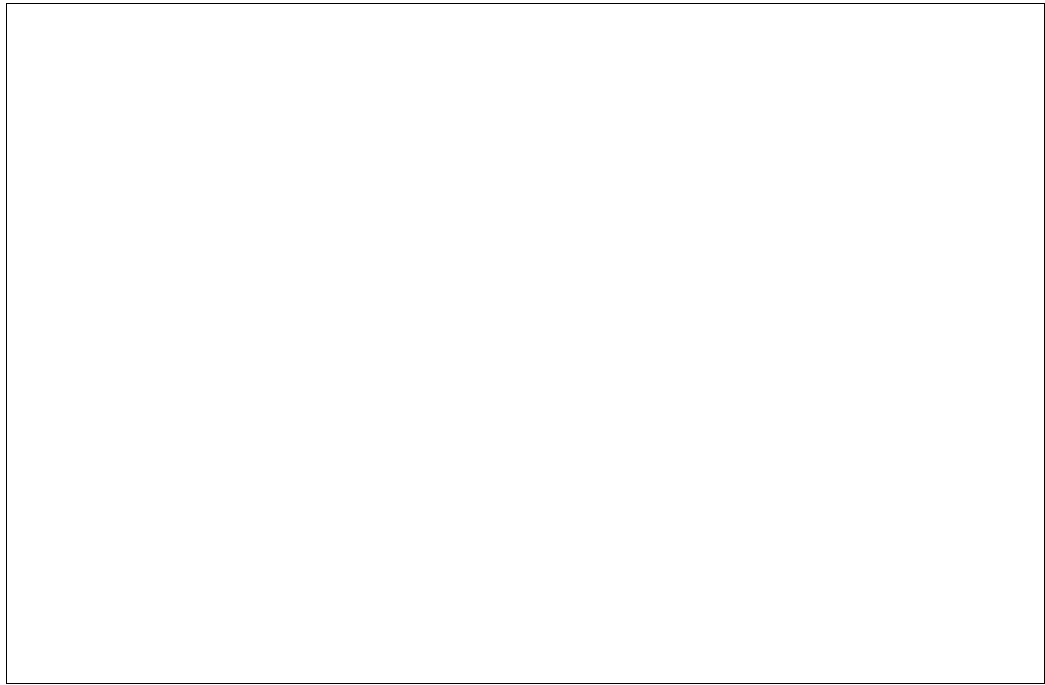
The tuna handline sector supports the fresh-tuna export and processing industry of the city. The catch is mostly composed of high-value large and matured yellowfin tuna and marlins. They, in turn, are exported as fresh/chilled whole round *sashimi*-grade yellowfin tuna (for the United States and Japanese markets), frozen smoked *sashimi*-grade yellowfin tuna (for Europe and US), vacuum-packed frozen *sashimi* (Japan) and other value-added products such as tuna sausage, tuna hotdogs, tuna nuggets, and tuna cold cuts. The latter is intended for US, Europe, Japan and the Islamic country markets. The finished steak and *sashimi* blocks bring in annually more than PhP2.5 bn (US\$50 mn) to the tuna processing industry.

The key players in the tuna handline fishing operation are the fisher-crew or *pasaheeros*, operators, boatowners and financiers. At the lowest rung are the fisher-crews. Practically all of them are undereducated if not uneducated. Most are migrants from other provinces, who have no prospects of landing formal jobs because of lack of credentials.

Pasaheeros usually earn through the sharing system. The share of the fisher is equivalent to 20-25 per cent of the actual gross sale of the captured tuna. The income would vary from season to season due to the uncertainty of weather conditions.

Old and weak

The majority will remain crew until they are too old and weak to fish. They can at best aspire to become fishing boat operators. Fishing boat operators act as master fishermen and boat captains. They



usually rise to the rank after years of experience and efficiency as fisher-crew. Only a few of these operators are able to save enough to start their own fishing businesses as owners.

Boatowners, on the other hand, are generally under the mercy of financiers since the capital requirements for each fishing expedition are extremely high. As with the other sectors of fisheries, financiers usually control the selling price and market of the catch. This kind of relationship disempowers the fishing boatowners.

In the early 1970s, fresh from college, Roger Lim, Sr. was recruited for the Development Academy of the Philippines-Medium and Small Scale Industries Co-ordinated Action Program (DAPMASICAP). After his stint, Lim started his own handline fishing operations. Handline fishing of large tuna was then in the early stage, making Lim one of the pioneers. As his business venture grew, after two or three years, Lim or “Manong” Roger, as most of his employees, friends and associates call him—“Manong” is a Visayan-Filipino term of respect and endearment, meaning “elder”—started giving out handline fishing boats to qualified fishermen of his company as a sort of “social accountability” programme to let his fisher-employees realize their dream of becoming fishing entrepreneurs themselves.

Lim distributes handline-fishing boats to deserving fishermen-operators, without investigating the personal background of his fisher-crews and fishermen-operators, most of whom are from Mindanao and the Visayas islands. These operators rose from the ranks of fisher-crews. Most of the fishermen-operators were the same crew who developed their efficiency and fishing skills through their long experience in tuna handline fishing operations. Based on their fishing records and their inter-personal relations with other fisher-crews, they would get elevated to fishermen-operators. Interpersonal relationship skills are very important for the management of tuna fishing boats since there are 15-20 fishers as crew under each fisherman-operator.

Lim’s handline fishing boat distribution is not a dole-out programme. Beneficiaries under the “pay-when-able” scheme would slowly pay back the cost of fishing boat, without interest. This allows funds to be ploughed back for the distribution of additional fishing boats. Performance is the basis for promoting operators to owners of handline fishing boats.

Entrepreneurs

Besides the enterprise to catch and earn more, operators must show that they can manage their fisher-crews in each fishing expedition. By owning the boats, the fishermen-operators become entrepreneurs and industrial partners in

The Case of Francisco Herda

Francisco Herda could not believe that he was one of the winners of the first Karagatan Awards (literally, “Fishermen and Ocean” Awards) of General Santos City. The Karagatan Awards recognize the handline fishers who helped the city’s tuna industry grow to what it is today. The common characteristic among all the ten awardees was that, as beneficiaries of Lim’s programme, they all rose to become fishing boatowners from being mere fisher-crews of handline fishing.

Herda never dreamt of becoming a fisherman or an entrepreneur. In 1977, he migrated to General Santos City from the neighbouring province to try to get work with a multinational company. However, due to lack of education and contacts, he failed in his efforts. He managed as a construction worker but found the take-home pay inadequate. He also tried his luck as a *bira-bira* (a small-time trader who “pulls” baskets of fish from the boats to the markets) in the old fish-landing site for two years. In the early 1980s, he was earning PhP70-120 (us\$1.4-2.4) per day doing this work. He entered into Lim’s employment as a fisher-crew in the late 1980s, encouraged by the experience of his brothers-in-law who were earning well as fisher-crew on tuna handline boats.

Herda rose to the rank of operator in 1992. Lim entrusted him with the responsibilities of both captain and master fisherman on the handline fishing boat. After four years, Lim registered the fishing boat in Herda’s name.

“I could not believe it. We did not even sign any agreement for the transfer of ownership,” Herda recounts. It took three fishing expeditions before he realized that he was now

the owner of the fishing boat under his command. “No time frame for repayment was asked of me. It’s ‘pay when able’.”

The first boat was fully paid for in two years. Even before completing the repayment, Herda requested for another boat. And the rest is history. The 11 boats that he now owns employ around 230 fisher-crews, supporting over 700 dependents. Most of these are neighbours who cannot find any work. Herda’s children have already earned college degrees. The family is now financially stable, a stark contrast to when they were still starting out in the tuna business.

Herda considers the “social accountability” programme of Roger Lim, Sr. as manna from heaven. “I put together this fleet with not even a single peso and without any collateral. Without this programme, I might have still been a fisher-crew,” he says. “There is no chance that I would have grown as well since the fishing business entails such large capital outlays.”

In the past, Herda used to be out at sea most of the time. But after owning two fishing boats, he started staying on shore to manage them. This gave him more time for his family and his community. At present, he is the chairperson of Purok Bayanihan. Herda has also given one handline fishing boat each to his brother and brother-in-law.

Following Lim’s advice of concentrating on human resources, Herda has focused more on the management needs of his fishermen crew and their families. It helps a lot that he knows both sides of the labour process—what it is like to be a fisher-crew and a boat operator.

Lim’s company, GenSan Aqua Traders. As industrial partners, they provide the effort and the tuna for the company’s processing and export ventures.

Lim also supports owners who want to grow their fishing fleet. Under this programme, Lim reserves the option to buy back the fishing unit if ever mismanagement occurs. He would compensate for the owner’s contribution and hand over the fishing unit to another beneficiary. Lim believes that some owners have limitations. “Some can

manage three fishing boats well, but if another one is added, they would have a hard time,” he says.

Lim has also tried to make his fisher-crews socially responsible citizens. In the late 1990s, he started requiring his industrial partners to pay one per cent of their gross income as tax to the local and national governments. As a result, what was once considered an informal sector became one of the prime movers of the city’s economy. Unknown to many, these handline fishermen are the ones who made General



Santos City the tuna capital of the Philippines.

As financier, Lim provides for the operational expenses of his industrial partners such as diesel, ice, food provisions for the crew, repairs, maintenance and marketing of the tuna produce. He also functions as a sort of informal social welfare officer for his industrial partners and their crew. Fisher-crews run to him during times of dire need, for medication, hospitalization, children's education or household emergencies. Advances for these are, in turn, deducted from the share of the fisher-crew or operators. There is no established term for the repayment for these cash advances. Lim says he always tries to ensure that his partners have sufficient take-home income.

Under Lim's programme, the boatowners and operators can decide whom to sell their catch to. The owner/operator oversees the selling of the catch, so as to ensure transparency of sale and the best price for the tuna.

Unfortunately, Lim's programme has remained largely undocumented and low-profile. Though many changes in in-house policies, rules and regulations were made in the course of the programme's implementation, most remain as Lim's personal learning and insights. This is worrisome, since it

hampers replication of the programme by other interested parties.

In a span of 20 years, the programme has been able to develop over 120 fisher-crews into entrepreneurs. These beneficiaries were able to improve their socioeconomic and political status in the community. From being unknown and marginalized, some went on to become leaders in their own communities. All the beneficiaries were able to send their children to school, ensuring a more certain future and helping break the cycle of poverty in their families.

The new entrepreneurs, in turn, employ hundreds of fisher-crew, like the fishing boatowner in Purok Bayanihan, Calumpang, who was able to employ more than 200, mostly the unemployed from the neighborhood. (A purok is a political-physical division of a village or barangay, with its own chairperson and set of councillors.)

Thus, by developing new Filipino fishing-entrepreneurs and generating jobs at the grass roots, Lim's programme brings hope to the economically marginalized and uneducated fishing communities.

This article is by Cristopher Rey Diaz Cadiz (casco@pltdsl.net), Publications and Information Specialist of the Centre for Advancement and Strengthening of Community Property Rights, Inc. (CASCO), a fisheries NGO based in General Santos City, Philippines

Helping hands the crafty way

A project to rebuild fisheries livelihoods in post-tsunami Sri Lanka was implemented with a participatory approach to building fishing vessels

Being an island, Sri Lanka has, over many years, developed fishing, particularly marine fisheries, into an important industry along its coastline of 1,585 km, consisting of sandy beaches, extensive lagoons, estuaries, mangroves, coastal marshes and dunes. In 2003, coastal fisheries contributed almost two per cent to Sri Lanka's gross domestic product. The sector directly employs 300,000 fishermen, and altogether, has provided direct and indirect employment to one million people in the country.

The fishing industry earns foreign exchange for the country. In 2003, it contributed US\$100 mn by exporting fish products such as tuna, shrimp, lobster and ornamental fish. Fish accounts for 65 per cent of the total animal protein consumed in Sri Lanka.

Prior to the December 2004 Indian Ocean tsunami, the total fish landings in the country were 280,000 tonnes, of which 90 per cent were consumed domestically, and the rest, exported. However, to meet the increasing domestic fish consumption, 70,000 tonnes of dried and canned fish were imported into the country in 2004.

Statistics show that the largest contribution to fish production comes

from the coastal marine fishery (inshore fishery), which is, in fact, a small-scale fishery, whereas the contribution of the offshore fishery (mainly targeting large pelagics) is low (see Table 1).

The small-scale sector accounts for nearly 65 per cent of the total fish production. Twelve fishing harbours and 700 fish-landing centres operate along the coast. Brackishwater aquaculture, mainly for shrimps, contributed 2,400 tonnes in 2004.

The coastal fishing fleet has increased in size since 1984 (see Table 2). The number of fibreglass reinforced plastic (FRP) boats rose from 6,882 in 1984 to 11,559 in 2004, while motorized traditional and beach-seine craft decreased. The offshore fishing fleet has shown the greatest expansion during this period.

Civil strife
Marine fish production increased from 57,457 tonnes in 1960 to 167,412 tonnes in 1980. Civil strife disrupted fishing in the north and east of the country, reducing production to 145,798 tonnes in 1990. The increase in fish production in recent years can be attributed to the rapid development of the offshore fishery, which mainly flourished in the south and west, resulting in 259,680 tonnes and

Table 1: National Fish Production (1985-2004 in tonnes)

		1985	1990	1995	2000	2004
Marine Fisheries	Coastal	140,270	134,130	157,500	175,280	154,470
	Offshore	2,400	11,670	60,000	84,400	98,720
Total		142,670	145,800	217,500	259,680	253,190
Inland fisheries		32,740	38,190	18,250	36,700	33,180
Total Production		175,410	183,990	235,750	296,380	286,370

Source: MFAR Statistical Unit, 2005



274,760 tonnes in 2000 and 2002, respectively.

The tsunami of 26 December 2004 had a particularly devastating impact on Sri Lanka, which was one of the worst affected areas in the Indian Ocean region. More people died in Sri Lanka as a result of the tsunami than anywhere else, apart from Indonesia. The tsunami caused severe damage to coastal communities in 12 of the 14 coastal districts in the country. Loss of lives and infrastructure hit the fishing sector hard, especially as the ten most affected districts account for over 81 per cent of the country’s total marine fish landings. Also, over half the national fish resources are found in the southern and northeastern coastal areas, the ones worst hit by the tsunami.

Damages to the fisheries sector can be mainly categorized thus:

Fishing communities: A total of 4,870 persons were reported dead, while 136 were reported missing. The number of houses of fishers and their families destroyed and damaged has been enumerated as 16,434 and 13,329, respectively.

Fishing vessels: The tsunami rendered around 73 per cent, or close to three-fourths, of the 32,000-strong fishing fleet unseaworthy and totally destroyed about 54 per cent. The cost of repairing

and replacing fishing craft and gear has been estimated at US\$57 mn.

Harbours and anchorages: Around 10 fisheries harbours, 37 anchorages and 200 fish-landing sites and associated facilities, fishery co-operative buildings and vehicles were extensively damaged. Additionally, marine structures, including breakwater rock boulders, fuel tanks, pumps and distributor systems, slipways and boat repair yards, were damaged. The estimated cost for repair of damage to these facilities is US\$65 mn.

Coastal environment, including aquaculture: Since the tsunami waves, on average, penetrated 0.5 km inshore, large tracts of the main agricultural areas were affected. The shoreline was severely disrupted, eroded and covered with debris. Sand and sediment washed from land and deposited in the nearshore area have affected the reef lagoons. In low-lying areas and along creeks and inlets, the waves penetrated up to 2 km from the shoreline. Among the coastal habitats important for fisheries productivity, coral reefs and mangroves seem to have suffered at varying levels as a result of the tsunami. Coral formations, which are habitats and breeding grounds for some fish species, were damaged by debris. Although it can be assumed that the tsunami destroyed breeding and nursery habitats of species such as parrotfish (*Scaridae*), snappers (*Lutjanidae*) and sweet-lips (*Haemulidae*), detailed coral



Table 2: Development Trends of Fishing Vessels in Sri Lanka

Fishing Vessel Type	1984	1990	1995	2000	2004
Non-motorized traditional craft	13,171	14,580	14,649	15,109	15,260
Motorized traditional craft	3,861	973	1,060	1,404	675
FRP boats (20-23 ft)	6,882	9,758	8,564	8,690	11,559
3 ½ tonne boat (28 ft)	2,718	2,364	1,357	1,470	1,493
Offshore multiday boats (34-50 ft)	72	1,639	1,430	1,591	
Beach Seine craft (22-31 ft)	1,261				1,052

Source: MFAR Statistical Unit, 2005

Table 3: Fishing Vessels Destroyed by the Tsunami

Fishing Vessel Type	Destroyed	Damaged	Total
Multiday boats	187	676	863
One-day boats	276	783	1,059
FRP Boats	4,485	3,211	7,696
Traditional craft	11,165	2,435	13,600
Beach-seine craft	818	161	979
Total	16,931	7,266	24,197

Source: Food and Agriculture Organization of the United Nations (FAO) Sri Lanka

Table 4: Estimated Loss in Fish Production, 2005

Estimated Loss in Fish Production 2005	Tonnes
Production Loss Due to Boats Destroyed	86,066
Production Loss Due to Boats Damaged	25,323
Production Loss Due to Gear Lost ¹	6,143
Total	117,532

Source: Strategy Document, MFRA, 2005

¹ The assumed loss in production due to lost gear takes into consideration the mean annual catch per unit effort (CPUE) in each boat category for previous years, as provided by the Statistical Unit/MFAR. No adjustment has been made for a possible increase in CPUE at a lower level of fishing effort.

reef damage assessments will be necessary.

Sri Lanka’s coastal fishery has a multi-gear and multi-species nature. The fishing vessels include diverse types of traditional and large-scale fishing craft such as the small *theppam* and *kattumaram*, wooden dugout or fibreglass canoes (*oru*), fibreglass day-boats with outboard and inboard engines, and multiday boats with inboard engines.

In addition, cast nets and beach seines are used near the shore. Other types of fishing gear include drift-nets,

pole-and-line (for tuna), trammel nets, handlines, longline, purse-seines and push-nets.

Considering this wide variety, the task of replacing lost gear is a complex one that inevitably requires the participation of, and dialogue with, the affected fisher communities. One project that attempted to do so was undertaken by Practical Action, (formerly, ITDG) South Asia. It implemented a participatory approach to rebuilding fishing vessels post-tsunami, encouraging the participation of the fisher communities and district fisheries extension office (DFEO) at all stages—from

beneficiary selection to the completion of the construction of the fishing vessels. The basic aim was to ensure the production of fishing vessels suitable for the local conditions of fish-landing sites.

The participatory approach to building fishing vessels was divided into three steps: (i) selection of beneficiary; (ii) identification of the type of fishing vessel required; and (iii) construction and handing over of the fishing vessel.

To begin with, a list of potential beneficiaries was obtained from the DFEO. This was cross-checked with all the stakeholders in the community, not just the craft owner, but also the full-time and part-time fishworkers (men and women), full- and part-time fishers (men and women), fish processors and so on. Officials like fisheries inspectors, and heads of societies and co-operatives participated in the beneficiary selection meeting too.

Open public meetings were announced through posters and notices. The final beneficiary list, based on a consensus, was submitted through the Fisheries Inspector to the DFEO for approval. Upon receipt of approval, the next stage of identification of the type of fishing vessel required was done. The fisher community was encouraged to come up with the specifications of the required fishing craft. It was noteworthy that the participation of the fisher community was very high in providing information pertaining to the design of the fishing vessel, even, in some cases, drawing the designs on paper.

One successful method employed to identify the craft required was to mobilize the fisher community to collect the damaged parts of the fishing crafts and reassemble them into a dummy of the vessel they had in the pre-tsunami period. This, as well as getting the fisherfolk to draw the designs, were enthusiastically embraced by the community and encouraged the active participation of the fisherfolk in the task of reconstruction and rehabilitation.

Once the formal design was approved by the Marine Engineer of the DFEO, the construction process began with training

on fibreglass boatbuilding techniques. Usually, it takes about two-and-a-half to three weeks to build a mould for the fishing craft. After that is completed, the actual building begins. All through the construction period, the community members are encouraged to contribute in kind, in terms of food and refreshments for those building the craft.

Once completed, the fishing vessels are registered under the Ministry of Fisheries and Aquatic Resources (MFAR) through the relevant DFEO. After registration, the vessels are handed over to the selected fisherfolk.

Certain lessons can be drawn from the experience. Evidently, the choice of fishing craft is of paramount importance to fisherfolk. Any design should be based on a thorough analysis of the fishermen's needs, likes and dislikes, which, in turn, reflect the local sea and climatic conditions, the geographical location of a fish-landing site and the type of fishing techniques traditionally practised. The participatory approach to building and repairing fishing craft leads to the production of seaworthy, fishermen-preferred, location-specific fishing craft. This is especially true in a situation where there are no standards for rebuilding in the context of a disaster. Providing unsuitable or unseaworthy fishing craft can lead to a loss of confidence in fishermen to return to the sea for fishing.

On the matter of beneficiary selection, involving all the stakeholders in the community is of considerable importance, because a fisher community is highly stratified, both horizontally (in terms of type of craft owned) and vertically (in terms of nature of employment, whether full-time or part-time, workers, processors or traders and so on).

Giving fishing craft to non-beneficiaries creates an imbalance in the existing structure of power and traditional fishing rights within fisher communities, leading to social conflicts as well as pressure on fish resources.

Social tensions

'Conflict sensitivity' in terms of recognizing and understanding the social

When the right boat made the difference!

In the enthusiasm to help, it is often taken for granted that whatever is being given to the community is what they require. Read on to know why working with the community and taking into consideration their needs is imperative.

As the first rays of sunlight lit the sky near the Panama lagoon landing site, Somasiri, a middle-aged trader of fish and prawns, glanced through his purchase with satisfaction. “I’m happy that life is coming back to normal”, mumbled a fellow trader. Somasiri nodded in response. He knew what his friend meant. When the surging waves of the tsunami engulfed their canoes—their only means of livelihood—an eerie silence, intercepted by muffled wails, shrouded the small village. Thankfully, seven months after the tragedy, they were once again able to hear the usual hustle and bustle of fishermen manoeuvring canoes into the lagoon. But these seven months have taught them a lot.

Rebuilding life after having lost everything is indeed an uphill task, as these fishermen realized the hard way. The tsunami brought life to a standstill, as almost all the 40 lagoon canoes owned by the villagers, along with the fishing gear, were destroyed. “Panama is a sparsely developed village of Ampara district, and is largely inhabited by fishing community, who are both lagoon as well as sea fishermen” says Boyagoda, the Panama Fishing Inspector. Around 80 fishermen, and even some women, fish in the huge water body spread across 450 ha, and famed for its shrimp.

Immediately after the tsunami, a relief organization found this group of people and decided to provide them with some lagoon canoes and fishing gear, so that livelihoods could be restored. But as luck would have it, the organization was not able to fulfill the needs of all the fishermen, and only a few could be given the fibreglass canoes. Those who received canoes felt fortunate and immediately resumed fishing. But they soon realized that fishing in those canoes was a risk to their lives because the lagoon was full of 13-ft long crocodiles that could easily capsize the canoes.

To make things worse, the fishermen soon realized that the canoes were more than knee-high, making it difficult for them to cast

their nets in the water. Consequently, the initial euphoria of getting a canoe evaporated in thin air. The fishermen had to give up fishing in the lagoon. They also realized that the time-tested specifications of their traditional canoes were best suited for the lagoon.

At this juncture, Practical Action (then ITDG) started its fisheries project activities in Panama and decided to rebuild 40 lagoon canoes destroyed by the tsunami. The team received the list of beneficiaries from the DEFO. Subsequently, it was verified and cross-checked at an open community meeting, ensuring clarity, transparency, better team work and far fewer misunderstandings and conflicts.

Once the beneficiaries were selected, initial discussions were held with the community to understand the type of canoe best suited to the needs and specifications of lagoon fishermen, according to Liyanage, ITDG Project Officer, Fisheries. Enthused by the new approach, the fishermen brought some damaged canoes, which were used by them before tsunami. And, together the most preferred damaged canoe was chosen, which was then repaired by the community under the technical guidance of ITDG staff. “Four fishermen were also trained in the process”, adds Liyanage.

The design specifications of the repaired canoe were then sent to the DEFO for the approval of the government marine engineer. Upon approval, the mould of the canoe was produced, based on which all 40 canoes were constructed. Funding was arranged by ITDG, with the community chipping in with labour and food. After three months of hard work, the first few newly constructed canoes were handed over in an opening ceremony.

“It was indeed a win-win situation for all”, says Erwin Rathnaweera, ITDG Project Manager, Fisheries. “The whole process of taking the community along, understanding their concerns, and making full use of their experience gave immense confidence to the community. Besides, it was a great learning experience for us too. We realized that in the fisheries rebuilding process, two things are of extreme importance: the appropriate identification of the beneficiaries, and giving or procuring seaworthy boats, or canoes, that the fishing community finds apt.”

tensions prevalent between different ethnic groups and fishers (those using illegal and environmentally harmful fishing gear, for instance), needs to be in place before implementing participatory exercises with fisher communities. Lack of such sensitivity can worsen existing conflicts or generate new ones.

Participatory exercises such as the one elaborated here can pave the way for other team-based activities. In Sri Lanka's specific case, community participation in fisheries management, as envisaged in the Fisheries Aquatic Resources Act No.02, 1996, has not had much success due to community and ethnic biases, and social and political pressures. Non-participatory approaches have weakened community-based fisheries management initiatives.

This article is by Erwin Rathnaweera (erwinr@itdg.slt.lk) and Jayantha Gunasekera (jayantha.gunasekera@practicalaction.org) of Practical Action South Asia

MARINE TURTLES OF THE INDIAN SUBCONTINENT. Edited by Kartik Shanker and B C Choudhury. Orient Longman Private Limited and Universities Press (India) Private Limited, Wildlife Institute of India (WII) and United Nations Development Programme (UNDP). March 2006, 415 pp.

Tracking turtles

A collection of essays and articles looks at marine turtles in the Indian subcontinent and the conservation efforts required to save them

The Indian subcontinent provides nesting grounds for five of the world's seven species of marine turtles—olive ridley, green, hawksbill, leatherback and loggerhead. They form the focus of the publication under review. A collection of surveys, reviews and essays, it provides information on turtle biology, habitat, population status, fishery-related mortality, the various threats faced by these marine turtles and the conservation efforts required to save them.

Essentially, the book documents the various research activities undertaken, between 2000 and 2002, by the joint Government of India-UNDP Sea Turtle Project. They include surveys on the status of the marine turtle population along the islands and the east and west coast of India, Sri Lanka, Pakistan and Bangladesh as well as a review of various community-based conservation efforts.

The book contains 30 chapters divided into eight parts. The first chapter provides an interesting and comprehensive overview, tracking the research and conservation efforts from historical records and scientific reports from the 1970s to current initiatives. The chapter concludes by highlighting the need for responsible marine fisheries not merely for the sake of marine turtle conservation but also for the economic concerns of stakeholders, particularly local communities. The editors hope that the coming decade in marine turtle conservation will be one of partnership

and collaboration among diverse stakeholders.

In *Turtle Trekker*, herpetologist and naturalist Rom Whitaker describes the tremendous pioneering efforts of Satish Bhaskar in surveying turtles along the Indian coast. Bhaskar's survey results and publications (also listed in the chapter) form the baseline for turtle biologists in India. This chapter provides an interesting recollection of 'turtle walks', and traces the different moments and individuals in the history of marine turtle conservation in India.

The second and third parts of the book contain ten chapters of detailed biological and ecological information on marine turtles—their nesting grounds, nesting intensity, distribution and season, size class and reproductive efforts, for each of the species found in the waters along the east and west coasts of India, including the Andaman and Nicobar Islands and the Lakshadweep Islands. The methodology adopted in assessing the status of marine turtles has been analyzed and the information has been presented in well-defined tables, charts and maps. The chapter on Orissa, for instance, provides descriptive information for all three popular nesting grounds of olive ridley turtles, along with maps of the region.

Habitat loss

These chapters also provide information on the number of fishing vessels and fishermen in the coastal States. They also identify the threats faced by marine turtles in these States, which could have caused their decline in numbers. These range from degradation of habitat and depredation of eggs and hatchlings, to

tourism and coastal development, coastal pollution, aquaculture, casuarina plantations on the nesting beaches, beach erosion, consumption of meat and eggs to fishery-related mortality.

Most of the authors in this publication identify the major threat to the marine turtle population as fishery-related mortality and depredation of eggs. These chapters also provide information on the various conservation initiatives undertaken by the respective State governments, non-governmental organizations (NGOs), stakeholders and research institutes, and suggests a set of recommendations to be implemented.

Particularly noteworthy is the chapter on the marine turtles of Sri Lanka, which provides a historical account of the trade in tortoise shell and turtle meat in the region, which dates to 64 BCE and was prevalent until recently.

The fifth part of the book draws attention to fishery-related issues. The chapter on fishery-related turtle mortality highlights the various changes in the Indian fisheries scenarios from the 1950s to 2000, the move towards mechanization, and the increase in the number of fishing vessels along the Indian coast. Most of the turtle mortality occurs in the east coast of India, and gill-nets account for the maximum mortality (60 per cent for the period 1997-98), followed by trawl nets and other

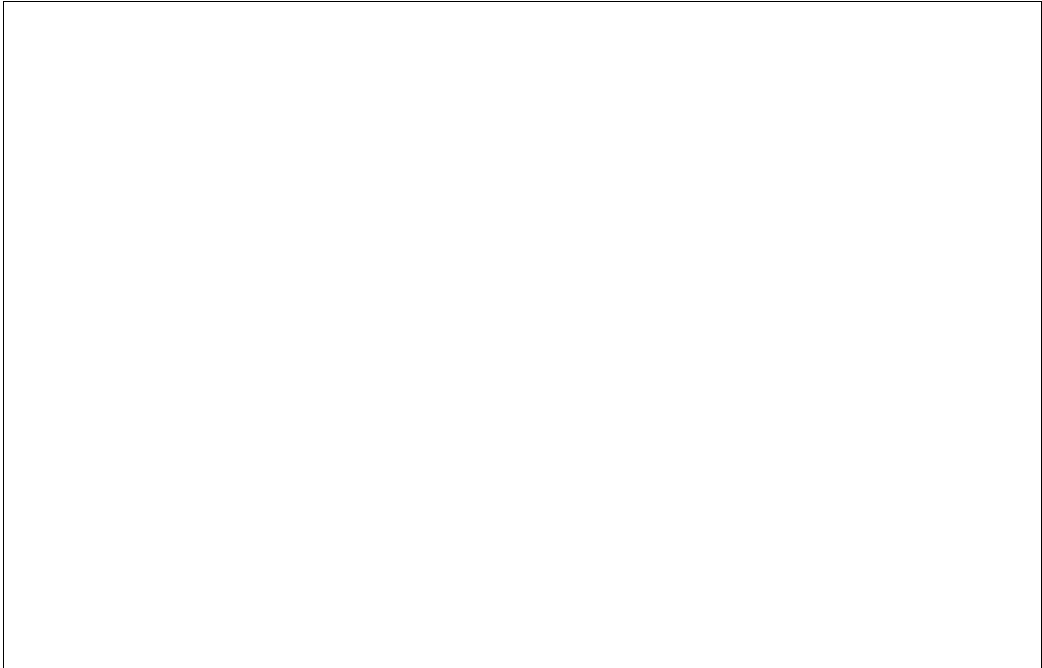
gear. An important caveat mentioned is that there could be an underestimation in the number of turtles stranded by trawlers.

Among the management and conservation initiatives suggested to reduce turtle mortality are spatial and temporal restrictions on gill-net fishery along the coast, and a precautionary and participatory approach to conservation. This section also highlights the lack of information on the stock size of turtle populations, leading to mere estimations of the extent of fishery-induced damages, which are thus not assessed properly.

The next three chapters in this part explain the working of the turtle excluder devices (TEDs). Chitta Ranjan Behera highlights the perspective of the trawling community in Orissa on TEDs. He explains the stand of the trawler-owners and their criticism of the TED model from the Central Institute of Fisheries Technology (CIFT). Behera draws attention to the ‘trawl guard’, an indigenous device developed by the local fisherfolk of Orissa, which performs the function of the TED in a more fisher-friendly manner.

Awareness campaign

According to another chapter in this part, the implementation of TEDs in the coastal waters of Andhra Pradesh, a State in south India, involved awareness camps and demonstration workshops. The general consensus seems to be that the interests of



fishermen should be taken into consideration for the effective implementation of TEDs.

Most of the recommendations in these chapters call for participatory conservation methods, where communities—especially fishing communities—are involved and their needs, particularly livelihood interests, are taken into consideration. Roshni Kutty explains the various community-based conservation initiatives in India, highlighting the efforts in two States, Goa and Kerala. In Goa, the community has been involved in turtle conservation and hatchery initiatives, and turtle nesting sites are used to attract tourists.

In Kerala, the educated youth of a village have been involved in turtle conservation and hatchery initiatives to save the endangered species and thus protect the habitat in the process. The chapter also evaluates the community-based initiative in Rushikulya, Orissa, where fishing communities have been part of 'Operation Kachhapa', a conservation effort initiated by external NGOs. Operation Kachhapa supports government enforcement, monitoring and research activities, protection of nesting sites, public awareness programmes, training programmes and various legal initiatives. The chapter reveals how monetary benefits are important to get people to respond to conservation education and awareness.

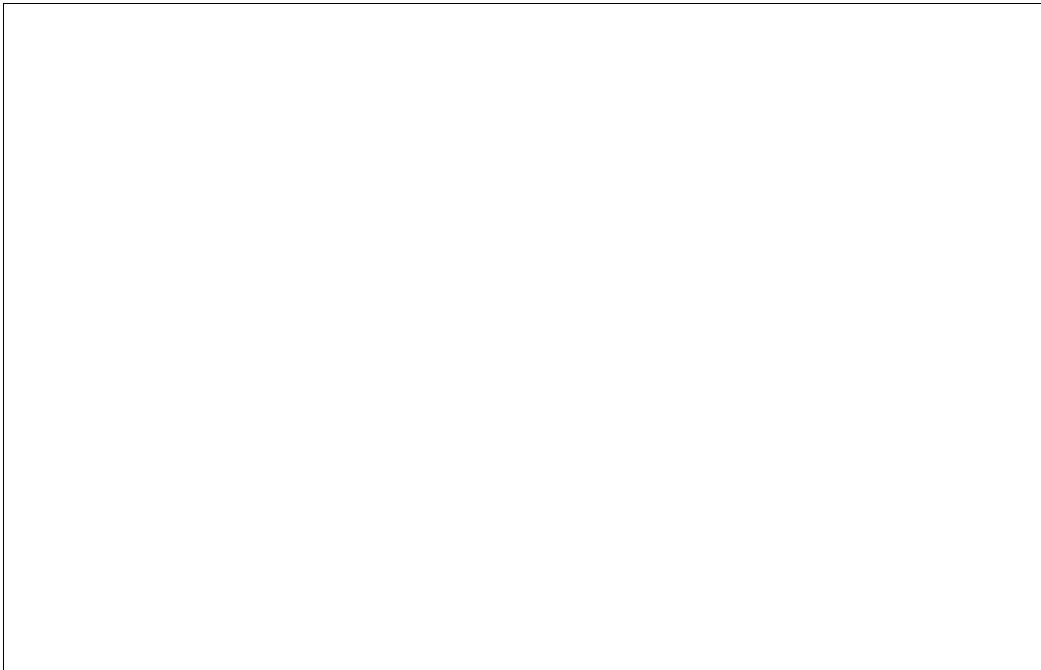
Part 7 provides an indepth analysis of the various legal instruments that are currently in place for conservation of turtles. The first chapter delineates the various Indian laws enforced by the central government for the use, protection and conservation of marine areas, highlighting the important provisions. It also provides a brief overview of the various international instruments that relate to conservation of marine areas, protection of species and habitat. The chapter explains the working of these instruments, classifying them into those directly dealing with marine turtles like the Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC), and

explains the provisions under the Convention on the Conservation of Migratory Species of Wild Animals (CMS) along with the various memoranda signed for conservation of turtles. It also explains the importance of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) and the various Conference of Parties decisions, and the method of listing species in this convention. It also provides relevant information on the debate of turtle listing and trade in turtle products. This exhaustive analysis also covers other instruments that have indirect impact on marine turtles, including the 1995 Code of Conduct for Responsible Fisheries of the Food and Agriculture Organization of the United Nations (FAO), and the agreements under the World Trade Organization. The chapter lists the various bilateral and trilateral agreements in place for the conservation of marine turtles in the Asian region.

The last part of the book is interesting, as it takes up the various problems in methodology mentioned in the first chapter. There is no standard format for assessing turtle mortality, and turtle nesting, and the lack of data has hindered the formulation of management plans. As different agencies have used a variety of approaches and methods to assess the same information, there is a need for collaboration between research and management agencies. One chapter explains how the migration and movement of olive ridley turtles have been tracked in the east coast of India, using conventional metal tags and satellite telemetry, and traces the movement of the turtles from the nesting grounds to the feeding grounds. Other chapters highlight the use of remote sensing technology to characterize the land parameters of nesting habitats, the effect of geomorphology on olive ridley nesting beaches and the effect of marine pollution on marine organisms.

Current research

Most of the chapters provide information relating to India, using the results of research conducted during 2000-2002. More recent research output would have provided better insights into the current situation. The editors could also have gone to some trouble to unearth and detail



some of the other initiatives in India besides the GOI-UNDP project to protect turtles.

A recent initiative relates to the Indian State of Orissa, where the Orissa Marine Resources Conservation Consortium (OMRCC) was formed. The OMRCC is made up of fishworkers’ unions of Orissa, conservation organizations, development NGOs, turtle biologists, and individuals interested in marine turtle conservation measures and/or sustainable fisheries in Orissa.

Also worrisome from the point of view of academic rigour is that some of the research activities mentioned in the publication were undertaken for a short period, not long enough a time span to draw definitive observations and conclusions. The book could have done with a glossary of terms for non-biologist readers interested in turtle conservation. Most of the chapters provide recommendations, and highlight the lacunae in the respective research areas. If compiled separately, they would have proved useful in setting the agenda for future research.

The book provides a list of organizations that work on turtle-related research in India, and also an extensive index, which is very helpful in locating information quickly. Overall, this book will be useful

for turtle biologists, researchers working on turtle-fishery interactions, and policymakers and other activists. Between its covers can be found a stimulating assemblage of information and reflections that could form the springboard for future research and policy.

This review is by Ramya Rajagopalan (ramya.rajagopalan@gmail.com), Consultant, ICSF

Changing times, changing roles

Artisanal fishermen's organizations in Chile will need new skills and approaches to manage their fisheries

Artisanal fishermen's organizations in Chile were established to unite fishermen and fight for their rights. They are now increasingly required to manage quotas and engage in international commerce, functions that will demand a fundamental transformation of their ethos, style of functioning and *raison d'être*, requiring very different skills, approaches, relationships and management methods.

On 7 August 2006, Chilean artisanal fishermen formally celebrated 20 years of national-level organization. By chance, their celebrations coincided with the establishment of a new fisheries administration under President Michelle Bachelet.

The 2005 report on the artisanal fisheries sector published by the national fisheries service, Sernapesca, (www.sernapesca.cl), records 652 artisanal fishing organizations registered in Chile, with 35 regional federations and two national organizations. Of the 54,751 fishermen inscribed in the Artisanal Fishing Register (RPA), 42,091 belong to some kind of organization. Worker participation in these trade unions exceeds 75 per cent, a much higher level than in other labour sectors in Chile, where the levels of unionization in the total workforce declined from 14.5 per cent in 1991 to 10 per cent in 2000.

Chilean fishing communities organize themselves in *caletas*, or fishing hamlets and settlements. Today 40 per cent of the *caletas* are administered by organizations of artisanal fishermen. But the *caleta* became established as a formally recognized administrative unit only in 1997. Until then, artisanal fishermen faced a highly uncertain future, with the

great risk of alienation and expulsion. No explicit recognition was given to those areas where they carried out the shore-based activities on which their fishing livelihoods depended (landing and repairing their vessels, preparing their fishing gear, processing and selling their catches, and so on).

One main strength of Chile's artisanal fishing communities is the social networks that permeate the *caletas*, which are kept alive by the invisible work of women. These provide links between communities, and make up the social capital and the cultural identity of these people of the sea, who have ancient and deep links with the environment and the resources they extract. These elements—at times, highly visible, as in the case of the mutual support among fishermen at sea, and at other times, concealed—provide a safety net that makes the permanence and very existence of the coastal communities possible.

In 1998, following a national survey, 436 fishing *caletas* were registered along the length of Chile's 4,300-km coast. They were formalized through a Supreme Decree, which officially allocates to each region the name and number of *caletas* by region and province. Today, 453 permanent *caletas* are officially listed, with a further 105 temporary 'landing beaches', where fishermen may land their boats and carry out fishery-related activities on a seasonal basis. Of the permanent *caletas*, 343 or 75 per cent are classified as 'rural'.

Four categories

Sernapesca classifies registered artisanal fishermen into four categories: seaweed harvesters (*algueros*), boatowners (*armadores*), shellfish harvesters (*mariscadores*) and fishermen (*pescadores*). In addition, there are unknown numbers

of unregistered fishermen, possibly as many as 20,000.

Indirectly, the artisanal sector generates work for about 250,000 people nationwide, and around 400,000 people belong to family groups who depend on artisanal fishing.

Overall, the fisheries sector employs between 90,000 and 100,000 people, and artisanal fishermen represent around 60 per cent of the workforce. The artisanal sector has witnessed spectacular growth over the last few decades. In the 1970s, the number of registered artisanal fishermen was around 5,000.

Today it is nearly 55,000. Vessel numbers too have grown, from 5,000 in 1992 to 13,776 today. Artisanal fishing is based mainly in the xth Region (32 per cent), viiith Region (25.7 per cent), ivth Region (10.4 per cent) and vth Region (8.7 per cent).

There are currently close to 14,000 artisanal boats inscribed in the RPA, of which 3,957 are *lanchas* (completely decked motor vessels, up to 18 m long), 8,966 are *botes a motor* (open motor boats) and 1,219 *botes a remo* (open boats propelled by oars). Vessels that qualify as artisanal must be run by an artisanal operator, with an overall length no greater than 18 m, less than 50 gross registered tonnes and which are identified and registered as such by the authorities.

But formal statistics alone provide a gross underestimate of the actual social and economic dimensions of the Chilean artisanal fishing sector. The people involved in the actual fishing activities may be the most important and visible ones in the sector. But associated with them are an undetermined number of people and jobs that make their work possible.

Small boats that employ two or three crew are supported by many other professionals: the porters who prepare the fishing gear and launch the boat from the shore; the *encarnadoras*, women who clean, repair and bait the longlines; the beach officials who are responsible for the sale of the fish; and several others who provide services as filleters, fish transporters and petty traders.

This complex web of social and economic relations is what constitutes artisanal fishing communities, groups of people with their own culture, whose activities are based on a great degree of social co-operation. The highly informal nature of this assemblage makes it extremely difficult to obtain any really representative information.

Domestic market

Over the decade 1995-2005, fish exports accounted for 11 per cent of Chile's total export earnings. The artisanal fishing subsector contributes 90 per cent of the fresh fish consumed in the domestic

Conapach: The Voice of Chile's Fishers

Members of Conapach include shellfish harvesters, beach gatherers, divers, seaweed harvesters, *encarnadoras* (women hook baiters), and fishermen. Conapach provides a voice for all those who do not agree with the way the authorities manage the fishery. The fundamental aim of Conapach and its members is to ensure the sustainability of both marine resources and fishing communities.

With the mission of defending the rights of its members and improving the quality of life for Chilean fishing communities, Conapach represents fishing communities in decision-making processes that affect the artisanal fishing sector.

As a national confederation, Conapach supports the strengthening of artisanal fishing trade unions, and strives to improve them professionally, intellectually and culturally. Guided by the maxim "Unity is Victory", Conapach defends the rights of the men and women who belong to the organization.

market, thus playing a vital role in meeting Chile's food security.

But the sector has access to only approximately 28 per cent of the total catch, while generating 30 per cent of the income from fishing. According to data from the Food and Agriculture Organization of the United Nations (FAO), the per capita availability of fish in Chile for human consumption is 3.8 kg, but 20.64 kg are available indirectly as animal feed, mainly for the export-oriented salmon aquaculture industry.

In 1965 the Federación Nacional de Pescadores Artesanales de Chile (Fenaparch) was formed as a national federation of artisanal fishermen. But it ceased to exist in 1973, following repressive measures by the military dictatorship.

The fishworkers' movement was forced underground for the next 20 years, until democracy began its slow return in 1983. In 1986, following a long process of animation and consultation facilitated by

activists from the University of Concepción, a major national meeting of artisanal fishermen was organized.

The 10th National Congress of Chilean Artisanal Fishermen, following the footsteps of the National Congresses organized by Fenaparch, established the National Council of Chilean Artisanal Fishermen. Humberto Chamorro was elected as its first President.

Between 1987 and 1989, regional federations were established in the Vth, VIIIth and Xth Regions, and in 1990, the Confederación Nacional de Pescadores Artesanales de Chile (Conapach, www.conapach.cl), the Chilean National Confederation of Artisanal Fishermen, was established with the aim of grouping and representing artisanal fishermen's unions (*sindicatos*), co-operatives (*co-operativos*), and associations (*asociaciones gremiales*). Today Conapach is recognized nationally and internationally as the legitimate voice of most of Chile's 60,000 or so artisanal fishermen.

One of the first major challenges taken up by Conapach was to ensure that the interests of the artisanal fishing sector were included in the 1991 General Fisheries and Aquaculture Law. The main achievement was gaining official recognition for the 5-mile zone adjacent to the coast as an area reserved for artisanal fishing, albeit measured from baselines rather than from the most prominent points. Today, many fishermen feel that this zone should be extended to 12 miles, given diminishing resources close to shore. Currently, the main challenge facing Conapach is how to respond to a vastly different political, social, economic and resource situation than what existed in the late 1980s and early 1990s. For over a decade, successive administrations have been pushing for radical changes to Chile's 1991 Fisheries Law. This will involve far-reaching modifications to the fisheries management system, and to the property and access rights regimes, towards the adoption of more clearly defined individual property rights with a market-based allocation system.

Privatization process

Conapach has fiercely resisted this process of privatization, which is seen as

a serious threat to the rights of the artisanal fishing sector, and to the social, economic and political organizations that exist there. The privatization process has divided the artisanal sector and split Conapach, leading to the formation of a second national organization, the Confederación Nacional de Federaciones de Pescadores Artesanales de Chile (Confepach), with Humberto Chamorro as President.

The modifications to the 1991 General Fisheries Law proposed by the Chilean government aim to:

- strengthen the regulations that govern the conservation of fisheries resources, safeguarding national interests;
- improve the performance of artisanal fishing activities, and develop the sector's productive capacity;
- maximize the economic growth of the sector, enhance the value added to its products, and increase the application of best practices in the industry associated with fishery extraction; and
- improve and adapt the participation of the sectors involved in the decision-making processes.

To achieve these objectives, resource allocation will be based on a quota system, within an overall total allowable catch (TAC), proportionally allocated to the industrial and artisanal sectors. In the case of the industrial sector, quotas are allocated to individual vessel owners, through the 'maximum catch limit per vessel operator' (LMCA) system. In the case of the artisanal sector, quotas are to be allocated through the 'artisanal extraction regime' (RAE), and the new administration of President Michelle Bachelet has the task of defining how this will operate.

According to the new Fisheries Subsecretary, Carlos Hernández, there are a number of issues to be tackled before the RAE can be instituted. These include replacing the current system of regional or zonal management with a system of management by fishing grounds, with specific management plans for the resources on those grounds. The 'scientific community' will participate in defining the state of resources, and in determining quota and closed-season regimes. It will be the job of the administration to set definitive quotas based on advice given on the TAC range. This may necessitate establishing mechanisms for allocating and managing individual quotas, community quotas, or *caleta* quotas.

Great diversity
Hernandez also concedes that the sector's diversity demands that a new definition of



artisanal fishing be conceptualized, recognizing at least three main categories: subsistence, small-scale, and highly efficient.

This may require defining, for each category, the nature of the vessels and their areas of operation, and letting each sector be governed by its own set of policies. New forms of worker organizations may also have to be established that are more appropriate for fisheries management than the *sindicatos*. Other priorities for the artisanal sector include setting up auction centres where fishermen will be able to obtain better prices for their products, and establishing social security and savings schemes.

Previously, attempts were made to improve commercialization through setting up fishermen's companies, that is, by turning fishermen into middlemen to trade the produce of their former fishing partners. That move created conflicts and divisions and, in general, failed in many *caletas* across the country. An alternative idea is now being tried out in San Antonio and in the Xth Region, with the construction of artisanal fishing ports. The plan is to create a regulated market where interference and distortions are reduced. Traders will have limited access. Handling and preservation of the product will be improved, and a fish auction will be organized by fishermen's organizations, and made accessible to buyers in a regulated manner.

Recognizing the growing importance of export markets for artisanal fishing, the Chilean government is set to invest in establishing international health and hygiene standards in the development of new artisanal port infrastructure in 14 *caletas* over the period 2007-2009. The development of artisanal ports and the improved commercialization of artisanal fishery products are to be closely associated with the allocation and management of quotas. For this, new forms of more commercially oriented fishermen's organizations may need to be developed, quite different from those that were developed in the 1980s and 1990s to fight for fishermen's rights.

The formation of Conapach (and now, Confepach) and their strong presence in

Chile reflect the deep-rooted tendency for Chile's artisanal fishers to organize themselves. This tendency can be traced to the notorious 1907 massacre of saltpetre workers in Santa Maria de Iquique, when around 3,000 striking mineworkers and their families were slaughtered by the Chilean army for demanding better working conditions. After the massacre, many of those who escaped fled south and settled on the coast, in the *caletas*, where they established self-help societies. These early self-help groups provided the basis of today's artisanal fishermen's unions.

Another key to the organizational tendency of artisanal fishermen is the particular system used for remunerating their activities. The 'share system' is a horizontal form of organization based on a contract through which fishermen arrange how the benefits from the day's fishing are distributed. This is according to the contribution made by each person to the vessel, to the materials used, to financing the operation, and to the work undertaken. It is based on consensual arrangements, of short duration (the time taken up by a day's fishing) and in which every partner makes a contribution to the work, materials or capital, with the profits shared according to the value placed on the different contributions made.

The share system arrangements also apply to different functions provided through a network of horizontal relations, with a high level of risk sharing and reciprocal relationships.

The testimony of Veronica, an *encarnadora* (hook baiter) from the *caleta* of Papudo in the Vth Region, illustrates this: "There are two ways of working: one is the 'share system' (*a la parte*), the other is the 'fixed rate' (*apreciado*). In the fixed-rate system, whether or not any catch is made, you still earn four *lucas*.

More risky

In the share system, if things go well for the fishermen, they also go well for the *encarnadora* because the profits are shared, and if things go really well, you can earn even more! If the fisherman earns 20 *lucas* I get 20 *lucas* too, and if he doesn't earn anything, then neither do I. Of course, it is a more risky system. You can chose between the fixed-rate and the share

system. In general, the fixed-rate system is preferred because it is more secure: whether or not there is a catch, you always earn the same. As for me, when there is no catch, I resign myself to my fate, because this is the fisherman's way of life."

Whoever contributes to the work of fishing qualifies as an artisanal fisherman and is inscribed in the respective fishery register, and the National Register of Artisanal Fishermen (RPA). Both the boatowners and the crew, being inscribed, possess the rights to participate in the fishery. The 1991 Fisheries Law recognizes the equal right of both people and vessels to be inscribed in the fisheries register, recognizing that the qualified artisanal fishermen are the people who account for the artisanal fishing effort.

In the case of the new fisheries law approved after much polemic debate at the start of December 2002, the State, rather than trying to strengthen social capital "as an element that could contribute to the sustainability of its intervention", is working against it, disregarding the bases that sustain it.

The new law proposes that fishing rights should only be allocated to vessels. The crews' resource access rights are seen as a function of the fisheries activities they may undertake in a vessel authorized to catch a particular species in a particular area; this denies them the fisheries access rights consecrated under the previous law, for which they will now have to depend on vessel licences.

The proposed system will remove the access rights of artisanal fishermen to Chilean fisheries resources. Only the entitlements of vessel owners and shellfish divers to such rights will be recognized. This fundamentally alters the way artisanal fishing is organized, which, until now, has been based on the share system. Productive relationships are now being transformed so that the respective crews are subordinate to, or dependent on, artisanal boatowners and shellfish divers, emphasizing employee-employer relationships.

This monumental decision to regulate the functioning mechanisms and the way

artisanal fishing is organized is based on the bureaucratic need to centralize vessel registration and to reduce the number of actors, while making the process as simple as possible. The de facto removal of fishermen's resource access rights will encourage a process that reduces worker's rights. It could cause unprecedented class conflicts, which may eventually lead to the breakdown of the cultural, organizational and productive composition of the sector.

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Aquaculture

Ensure greater coherence

The following Statement was presented to the Third Session of the Subcommittee on Aquaculture, Committee on Fisheries (COFI), Food and Agriculture Organization of the United Nations (FAO)

Fisheries and aquaculture play an important role in meeting the growing demand for fish, and in creating and sustaining livelihoods for women and men of coastal communities, especially in remote rural areas with few other employment opportunities. To enable that to happen, however, it is important to ensure greater coherence and complementarity between fisheries and aquaculture.

We believe that certain types of small-scale, family-owned aquaculture, in particular, have great potential to produce fish to meet local food security, to provide employment opportunities, particularly for women, and to sustain local communities and cultures. It is important for States to work towards recognizing and promoting such aquaculture.

However, indiscriminate development of aquaculture, notably of shrimp and salmon in Asia and Latin America, has led to serious socioeconomic problems. In the case of shrimp farming, these include severe conflicts, and even violence against local communities, associated, in particular, with land alienation; diversion of farm land; disruption of access to fishing grounds; negative impact on biodiversity, including of mangroves; salinization and overexploitation of water, including groundwater; and pollution. In the case of salmon, these include pollution and impact on wild fish through the spread of disease. Industrial shrimp and salmon aquaculture, geared mainly towards the export market, has contributed to foreign exchange earnings and high profits to investors, even though benefits to workers and local communities have been meagre. In India, concerted action by civil society to

highlight these problems resulted in a landmark judicial pronouncement, which then played a major role in State regulation of irresponsible shrimp aquaculture.

We would also like to draw attention to the overdependence on fishmeal, and the social and environmental problems associated with reduction fisheries for fishmeal in Latin America. Also problematic is the reported use of low-value fish species (inappropriately called 'trash fish') for fishmeal in Asia, which has increased the conflict between the use of low-value fish as fishmeal and as food, while compromising local food security and livelihoods, particularly of women in coastal communities. This has also given ecologically unsustainable bottom-trawling and push-netting a further lease of life.

We would further like to draw attention to the unregulated introduction of alien species for aquaculture. The introduction and rapid spread of the Pacific white-legged shrimp (*Penaeus vannamei*) in Asian and Latin American countries, and even in countries where its introduction is not officially permitted, is a case in point. The disregard for the impact of such uncontrolled introduction on local species, and thereby on the integrity of the ecosystem, is disturbing. In addition, current research on genetically modified fish, with a view to introducing such organisms on a commercial basis, in the absence of adequate information on the implications of such introduction, is not in keeping with the 'precautionary principle' and, therefore, not acceptable.

Against this backdrop, we would like to draw the attention of this Subcommittee to the importance of:

- monitoring conditions of work (related to safety, social security, remuneration, working hours, etc.) in aquaculture farms, and the use of child labour;
- extending support to small-scale, family-owned, traditional aquaculture systems that provide employment, particularly for women in rural communities;
- emphasizing greater energy efficiency in the use of inputs, and reduced dependence on fishmeal;
- giving priority to use native species, and strict regulation and monitoring of the introduction of non-native species for aquaculture operations, in accordance with Article 9.3 of the CCRF (Code of Conduct for Responsible Fisheries) and COP (Conference of Parties) decisions of States parties to the Convention on Biological Diversity and the Ramsar Convention;
- providing a greater role for civil society, to ensure more inclusive decisionmaking and monitoring of the social, economic and environmental impacts of aquaculture; and
- recognizing the need for clear policies and guidelines for the development of aquaculture, including mariculture operations, in the framework of coastal management, in particular, to ensure that aquaculture does not threaten responsible fishing operations and the livelihoods of women, or lead to negative impacts on capture-fisheries-based livelihoods, in accordance with Article 9.14 of the CCRF. 3

This Statement was made on behalf of the International Collective in Support of Fishworkers (ICSF) at the COFI Subcommittee on Aquaculture meeting in New Delhi, India, on 4 September 2006

News Round-up

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Fishes live

Some 500 assorted live fish species confiscated from 24 Chinese fishermen last October by the Philippines' authorities were released back into the sea, reports *Balita*.

Provincial Fishery Officer Panciano Gianan identified the live fish species as the endangered Napoleon Wrasse or *mameng*, sharks, *maya-maya* and the coral-dwelling groupers or *lapu-lapu*.

The release was done at the Puerto Princesa bay by personnel of the Bureau of Fisheries and Aquatic Resources (BFAR), Philippine Coast Guard (PCG) and members of the Provincial Committee on Illegal Entrants.

Gianan said the confiscated fish underwent re-conditioning for them to survive and reproduce in the sea. He noted that the fishes were contained in a Chinese vessel's built-in aquarium when seized by PCG

and BFAR operatives off Mangsee Island, Balabac town. Also confiscated were frozen *dalagang bukid*, confirmed to be caught by dynamite fishing.

The 24 Chinese fishermen detained at the Palawan jail are now facing three cases of violation of the Philippine Fisheries Code of 1998 before a local court. These are Section 87 (poaching in Philippine waters), Section 88 (fishing with explosives, noxious or poisonous substances) and Section 97 (fishing or taking rare, threatened or endangered species).

High-tech fish lure

If you like to fish and find that there are far less to bring home, you're not alone. From everyday anglers to giant commercial fishing fleets, they face the same problem. The solution may just be in a new way to bring fish from far away by making them mad at you, according to a report from *MMD Newswire*.

Just ask Captain Bob Swift, a six-boat charter operator in Valdez, Alaska. He was sceptical until only one of his customers caught giant fish with a beta

version of something called 'SONARLURE' while the others on the boat did not. No pipe dream, creating

fishy aggression by sending sub-surface signals to encourage aggressive behaviour somehow seems to attract hungry 'denizens of the deep' to the hook or net.

Results of tests on Prince William Sound (Alaska) and off the Shetland Islands (Scotland), both areas where fishing has seen a major decline, has created a worldwide buzz, prompting a flood of demands from charter and commercial operators whose livelihood depends upon bringing in a bigger catch.

'SONARLURE' is a variation of a once hush-hush government idea to signal dolphins to deliver explosives under enemy shipping; supposedly ended when the finny creatures forgot to leave afterwards. No longer electronic, it uses a patented design to apply the

science of fluid dynamics to send out signals. When pulled through the water (what fishermen call 'trolling'), carefully crafted external 'lobes' vibrate at repetitive frequencies from the friction, which seem to act like a 'dinner bell'. The fish attack a lure dangling behind the sending device thinking they are about to eat a smaller fish that got there first. The same patented design is incorporated into seven lures, four for salt water, and three for freshwater fishing using hooks but no bait whatsoever. The sending device for trolling is aptly called the 'A-TRAC-TER'.

Anchovy ban

European Union experts have demanded an emergency ban on all anchovy fishing in the Bay of Biscay off Spanish and French States this year, saying stocks were

dangerously low, reports *eitb24.com*.

The European Commission said it will shortly impose a ban until the end of the year after fisheries advisers estimated that there were only 18,640

tonnes of adult anchovies in the Bay of Biscay this spring, far beneath a 28,000-tonne limit to stop fishing during spawning time.

“This is well below safe biological levels and the decision to close the fishery reflects the recognition by member states of the severe risk of collapse which the anchovy stock in the Bay of Biscay is now facing,” the Commission said.

This is the second year in a row that anchovy stock levels have been so low the EU has had to impose an emergency ban on fishing.

Coastal damage

Environmental activists in Indonesia are calling on the government and the public to halt the degradation of marine resources in order to prevent the kinds of disasters that have already caused suffering for millions of people, reports *The Jakarta Post*.

Riza Damanik, campaign manager for marine and coastal areas at Wahana Lingkungan Hidup Indonesia (Walhi- Friends of the Earth Indonesia), said the rapid damage to coastal areas has left 750 villages along some 81,000 sq km of the country’s coastline subject to chronic erosion. A study by Walhi showed that 90 per cent of the

disaster-hit villages were located in areas where coral reefs and mangrove forests were damaged. The 2005 State of the Environment report says that of the country’s 51,000 sq km of coral areas, only 5.8 per cent are well-preserved, a decrease from 2004 when 6.8 per cent were in good condition. Meanwhile, about 57 per cent of the country’s 9.2 mn ha of mangrove forests are in critical condition.

Experts say mangrove trees could halt erosion and mitigate the negative impacts of large sea waves on coastal areas, where some 16 mn Indonesians live.

“These villagers are suffering from ecological disasters, a natural result of our accumulated failures in preserving the environment and managing marine resources,” Riza said. He blamed the government for not stopping the conversion of coastal areas into big fishing ponds, which has decreased the ability of coastal areas to mitigate the impacts of disasters.

“Last year, my study estimated that fish farming areas totalled 800,000 ha, increasing at an average rate of 14 per cent per year,” he said.

Marine and Fisheries Ministry spokesman Aji Sularso said the government was fully aware of the situation and had drawn up various community-based programmes to improve conditions. “We are working not only to increase yields from the fishery industry but also to practice preservation,” he said.

Salmon Indica?

Indian authorities have recently decided to lower the duty rate on salmon from around 30 per cent to 10 per cent. “This is very good news because India is a market with a substantial long-term potential for Norwegian fishery and aquaculture industry”, Helga Pedersen, the fisheries and coastal minister said in a statement, according to *Fish Update*. “We must see this in the context of the long-term effort put in from the Norwegian side to reduce the Indian duty rates.”

India is one of the biggest markets in the world, with more than 150 mn inhabitants with approximately Western European living standards. Of new markets with

significant long-term potential for the Norwegian fishery and aquaculture industry, India, therefore, is one of the most important. So far, however, it has not been on the cards for Norwegian exporters to aim for the Indian market due to the country’s high duty rates on imports of seafood.

Norwegian authorities have, therefore, been working for a long period on having these duty rates lowered, and, in the first instance, for Norwegian salmon.

At the political level, the Norwegian Prime Minister Stoltenberg raised the question during both his visits to India, in April 2001 and December 2005.

At another level, Norwegian fishery

authorities have had a good dialogue over the last year with the Marine Products Export Development Authority (MPEDA) — a governmental agency subordinate to the Indian industry and trade department — in relation to a possible co-operation between Norwegian and Indian industry players within the fishery and aquaculture sector.

Relic

*I found this jawbone at the sea's edge:
There, crabs, dogfish, broken by the breakers or tossed
To flap for half an hour and turn to a crust
Continue the beginning.
The deeps are cold:
In that darkness camaraderie does not hold.*

*Nothing touches but, clutching, devours.
And the jaws,
Before they are satisfied or their stretched purpose
Slacken, go down jaws; go gnawn bare. Jaws
Eat and are finished and the jawbone comes to the beach: This is the
sea's achievement; with shells,
Verterbrae, claws, carapaces, skulls.*

*Time in the sea eats its tail, thrives, casts these
Indigestibles, the spars of purposes
That failed far from the surface.
None grow rich in the sea.
This curved jawbone did not laugh
But gripped, gripped and is now a cenotaph.*

— by Ted Hughes



ICSF is an international NGO working on issues that concern fishworkers the world over. It is in status with the Economic and Social Council of the UN and is on ILO's Special List of Non-Governmental International Organizations. It also has Liaison Status with FAO. Registered in Geneva, ICSF has offices in Chennai, India and Brussels, Belgium. As a global network of community organizers, teachers, technicians, researchers and scientists, ICSF's activities encompass monitoring and research, exchange and training, campaigns and action, as well as communications. SAMUDRA Report invites contributions and responses. Correspondence should be addressed to the Chennai office.

The opinions and positions expressed in the articles are those of the authors concerned and do not necessarily represent the official views of ICSF.

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